CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL

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I hereby declare that the thesis entitled "**CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL**" submitted towards partial fulfillment of the requirements for the award of **MD in Medicine** degree to BFUHS is a compilation of original work carried out by me under the supervision of **Dr. Sandeep Puri**, Professor, Department of Medicine and **Dr. Shibba Takkar Chhabra**, Professor, Department of Cardiology. No part of this thesis has formed the basis for the award of any degree previously.

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Dedicated

to

my Family

&

Teachers

ABBREVIATIONS

ACT	ARTEMISININ-BASED COMBINATION THERAPY
AF	ATRIAL FIBRILLATION
APACHII	ACUTE PHYSIOLOGY AND CHRONIC HEALTH EVALUATION II
API	ANNUAL PARASITE INDEX
BNP	BRAIN NATRIURETIC PEPTIDE
CYD-TDV	CHIMERIC YELLOW FEVER VIRUS-DENV TETRAVALENT DENGUE VACCINE
DDT	DICHLORODIPHENYLTRICHLOROETHANE
DENV	DENGUE VIRUS
ECG	ELECTROCARDIOGRAPHY
ELISA	ENZYME LINKED IMMUNOSORBENT ASSAY
GHK	GLOBAL HYPOKINESIA
IFA	IMMUNOFLUORESCENCE ASSAY
IV	INTRAVENOUS
IVC	INFERIOR VENA CAVA
LV	LEFT VENTRICLE
MR	MITRAL REGURGITATION
NAAT	NUCLEIC ACID AMPLIFICATION TEST
NSTEMI	NON ST SEGMENT ELEVATED MYOCARDIAL INFARCTION
RDT	RAPID DIAGNOSTIC TEST
RWMA	REGIONAL MOTION WALL ABNORMALITIES
STEMI	S T SEGMENT ELEVATED MYOCARDIAL INFARCTION
SVT	SUPRAVENTRICULAR TACHYCARDIA
TR	TRICUSPID REGURGITATION
VT	VENTRICULAR TACHYCARDIA
WHO	WORLD HEALTH ORGANIZATION

ABSTRACT

Introduction: Tropical fevers are defined as infections prevalent in tropical and subtropical region. They are caused by various bacteria, virus, protozoa and are most commonly transmitted via insect bite. The study would focus on cardiac complications in dengue, leptospirosis, scrub typhus and malaria.

Aim: To study cardiac manifestations in tropical fevers

Materials and Methods: The study was conducted on 300 hospital patients aged more than 18 years diagnosed with serology in Dayanand medical college and hospital. Biochemical profile, X ray, ECG and 2D echocardiographic findings were studied, compared with different tropical fever and analyzed.

Results: In this study total 300 cases of serology proven tropical fever were enrolled. Out of the total 300 cases, 73% were dengue patients, 11.3 % were leptospirosis patients, 20.7% were scrub typhus patients and 1% had malaria. 59.7% were males and 40.3% were females. Sinus tachycardia most common finding in dengue (41.1%), scrub typhus (50%) and leptospirosis (50%). Sinus tachycardia (p value 0.009) and sinus bradycardia (p value 0.037) were significant findings in scrub typhus as compared to the other tropical fevers. Pericardial effusion was seen in 5% of leptospirosis patients which was a significant finding. RWMA was seen in 1.7% of patients and GHK of LV in 6.3% of patients primarily seen in dengue fever. ST segment changes were present in 4% of cases of tropical fever. 7 patients out of 300 patients in our study had multiple organ dysfunction with cardiopulmonary arrest.

Conclusion: Determining the cardiac manifestations helps in optimizing diagnostic and therapeutic approach. Most of the cardiac complications needs targeted approach and 24 hours monitoring. Differential diagnosis may be simplified via implementation of characteristic findings. Life threatening complications would be anticipated and prompt diagnosis would help the whole management. Since outcomes are reversible, early diagnosis and better therapeutic coverage would be life saving in complicated cases of tropical fever.

Keywords: cardiac manifestations, tachycardia, tropical fever.

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INTRODUCTION

Tropical fevers are infections common in tropical and subtropical regions. In developing countries high density population and inadequate sanitation are often precipitating cause for outbreaks. Limited resources is a constant challenge in endemic areas. Critical care facility is a prerequisite for management of severe cases as in multiple organ dysfunction syndrome. Tropical fevers which have been studied include dengue, leptospirosis, scrub typhus and malaria. These infections are prevalent throughout year but are more common during the rainy and post-rainy seasons.[1] Symptoms that are common include fever, rigors, chills, headache, myalgia, abdominal pain and transient skin rash. Complications such as shock, altered sensorium, bleeding tendencies can necessitate admission to hospital.

Scrub typhus is a disease caused by a bacteria called Orientia tsutsugamushi. It spreads through bites of infected chiggers (larval mites). It accounts for nearly 50% of the cases of acute, undifferentiated febrile illness and is associated with significant morbidity.Case fatality rate of patients admitted with scrub typhus infection is reported to be 9%.[2] The mortality rate of scrub typhus ranges from 16.7% to 30% in Southeast Asia. Severe complications can be manifested by acute respiratory distress syndrome, encephalitis, interstitial pneumonia, acute renal failure, acute hepatic failure, and acute myocarditis.[3]

Myocarditis is postulated to occur as a result of endothelial involvement of the small vessels or secondary immune mediated reaction. In clinical profile morbilliform rash, eschar, splenomegaly, and lymphadenopathies a re typical signs.[4]

The cheapest and easily available serological test is the Weil-Felix test, but is unreliable. The gold standard is indirect immunofluorescence but the main limitation of this method is the availability in resource-poor settings. Indirect immunoperoxidase, a modification of the standard IFA method,

can be used with a light microscope and the results of these tests are comparable to those from IFA.

The drug of choice is doxycycline or tetracycline. Azithromycin is an alternative in children and pregnant women with scrub typhus and in doxycycline resistance.

Leptospirosis is a spirochaetal zoonosis caused by leptospira that affects both humans and animals. Humans become infected through direct contact with the urine of infected animals or with a urine-contaminated environment. Person-to-person, transmission is rare. Leptospirosis has no gender predilection usually, but due to high occupational exposure in men it leads to high risk of disease incidence in male than female. Incidence of more than 100 per 100000 is encountered in high risk groups.[5] Case fatality rate in severe leptospirosis range from 5% to 15%.[6]

The most characteristic feature of leptospirosis is conjunctival suffusion which is not found in other febrile illnesses. Other characteristic findings on the eye include subconjunctival bleeding and jaundice.

Rarely, inflammation of the heart muscles, inflammation of membranes covering the heart, abnormalities in the heart's natural pacemaker and abnormal heart rhythms may occur.[7] Complications such as chest pain, arrhythmias, pulmonary oedema and refractory shock have been reported in patients with severe disease.[8]

Rapid detection of Leptospira can be done by quantifying IgM antibodies using enzyme linked immunosorbant assay. WHO has recommended oral doxycycline for five to seven days for those with mild leptospirosis. Intravenous (IV) benzylpenicillinis recommended for the treatment of severe leptospirosis.

Dengue viruses spread to people through bite of an infected Aedes species (Aedes aegypti or Aedes. albopictus) mosquito. Common symptoms includes rash, fever, generalized weakness, decreased appetite and dehydration. Warning signs include abdominal tenderness, melena, hematemesis and shock. Dengue virus infection

affects the heart structurally and functionally. Cardiac complications secondary to dengue virus infection vary from self-limiting arrhythmias to severe myocardial infarction, leading to hypotension, pulmonary edema, and cardiogenic shock.[9]

In 2021 more than 1 lakh cases have been reported in India. Government data showed that 346 deaths were reported across the country due to dengue in 2021 as against 56 deaths in 2020 and 166 deaths in 2019.

The earliest change detectable on laboratory investigations is a low white blood cell count, which may then be followed by low platelets and metabolic acidosis.[10]

A moderately elevated level of aminotransferasefrom the liver is commonly associated with low platelets and white blood cells.[11] In severe disease, plasma leakage results in hemoconcentration and hypoalbuminemia. Pleural effusions or ascites can be elicited on physical examination.

Management includes supportive therapy and fluid resuscitation. WHO recommendsthat countries should consider introduction of the dengue vaccine CYD-TDV only in geographic settings where epidemiological data indicate a high burden of disease.

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. It is preventable and curable. The classic symptom of malaria is paroxysm-a cyclical occurrence of sudden coldness followed by shivering and then fever and sweating, occurring every two days (tertian fever) in P. vivax and P. ovale infections, and every three days (quartan fever) in P. malariae. P. falciparum infection can cause recurrent fever every 36–48 hours, or continuous fever. Possible complications of malaria include reduced cardiac output, conduction disorders, myocarditis, pericarditis, arrhythmias, cardiac tamponade, and heart failure. Malaria's direct consequences on the cardiovascular system remain poorly

understood, but hypotheses involve erythrocyte sequestration and proinflammatory cytokine response.[12]

In a study by Anna et al on metaanalysis and systemic review of cardiac complications in malaria the range of abnormal ECG was seen in 0-8%, cardiac biomarkers raised in 0-57%, and echocardiography was found abnormal in 4-9%. 33 cases postmortem were analyzed in which the most common cardiovascular pathologies were myocarditis and acute coronary syndrome.[13]

In South-East Asia Region in 2021, WHO accounted for about 2% of the burden of malaria cases globally, out of which, India was responsible for 79% of cases.[14] India is among 5 HBH Inations to showcase showed a decline in deaths, although their contributions to the malaria burden within HBHI countries is still substantial. Prompt parasitological confirmation by microscopy or alternatively by RDTs is recommended in all patients suspected of malaria before treatment is started. Artemisinin-based combination therapies (ACTs) are the recommended treatments. Quinoline antimalarials used have been associated with cardiovascular side effects such as sinus bradycardia, QRS complex widening and QT interval prolongation. RTS,S/ASO1(RTS,S) is the first and, to date, the only vaccine to show that it can significantly reduce malaria, and life-threatening severe malaria.

Cardiac evaluation includes biochemical profile which includes Trop T, CPKMB, Trop I and BNP levels. X ray suggests any signs of pleural effusion, pericardial effusion or cardiomegaly. ECG shows PR and QTc interval changes, rhythm abnormalities, conduction abnormalities and ST changes. 2D echo detects any regional wall motion abnormalities, global hypokinesia, systolic and diastolic dysfunction.

The treatment approach should be aimed at achieving a definitive diagnosis. The prime objective in the emergency room is to stabilize the patient by taking care of the vitals, establishing a patent airway, maintaining oxygenation and a mean arterial pressure to have adequate

tissue perfusion. This should preferably be done without any attempts of invasive monitoring as the patients with tropical infections may have associated thrombocytopenia or coagulopathy. Invasive monitoring can be reserved for the very sick and to be performed carefully after baseline laboratory data is available. Due consideration to blood or blood component therapy should be given before taking up invasive procedures. Isotonic fluid is preffered with an aim of maintaining haematocrit <33. Antipyretics and cold sponging should be used for fever control. Paracetamol in the therapeutic dose of 3 to 4 gram per day is safe but higher doses should be avoided.

Literature related to cardiac manifestations in tropical fever is very limited. Our study conducted identified various cardiac findings such as tachycardia, bradycardia, LV dysfunction, pericardial effusion and it's comparison among different febrile illnesses. This study guides in ICU management and also helps in allocation of health care resources appropriately in resource limited settings.

AIMS AND OBJECTIVES

AIM

To study cardiac manifestations in tropical fever.

OBJECTIVE

To study pattern of cardiac manifestations in tropical fever and assess it's correlation to outcome.

REVIEW OF LITERATURE

SCRUB TYPHUS

Scrub typhus is caused by bacteria called Orientia tsutsugamushi. It spreads via bite of infected chiggers. Orientia tsutsugamushi, is a Gram-negative α-proteobacterium of family Rickettsiaceae isolated and identified in Japan in year 1930.

HISTORY

Epidemics of scrub typhus occurred in troops ofBurma and Ceylon during World War II. The disease was also a problem for US troops stationed in Japan after World War II. DDT as prophylaxis and limited vegetation diminished infection rates. It was first reported in 2006 in Chile may be due to under diagnosis or underreporting. In January 2020 the disease was for the first time reported in Chile's southernmost region. In India, scrub typhus was recognized as typhus like fever in 1917 and there were subsequent periodic outbreaks. It is present throughout the country and seasonally from August to October. Myocardial involvement in scrub typhus was first described by Levine‘s post-mortem findings in 31 scrub typhus patients during World War II. He described myocardial inflammation in 25 (81%) cases.[15] It was proposed that myocarditis may occur during infection due to disseminated endothelial infection of the small vessels or by secondary immune mediated mononuclear inflammatory reaction.[16]

EPIDEMIOLOGY

Scrub typhus appears to be distributed in the Tsutsugamushi triangle which is over a area of 13 million Km square bound by Japan in the east, through China, Philippines, tropical Australia in the south and west through India, Pakistan, Tibet to Afghanistan and southern parts of USSR in the north. The Orientia genome has a high degree of plasticity and is considered to be the most highly repetitive bacterial genome sequenced.[17] This diversity is a result of high numbers of intragenomic deletions, duplications, and rearrangements with transposable and

conjugative elements. These recombinations and rearrangements are unlikely to occur in dead-end hosts, but the details of this process are unclear.[18] The vector of scrub typhus is present in most countries of the South-East Asia Region and it is endemic in certain geographical regions of India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka and Thailand. In India there have been outbreaks in the sub-Himalayan belt, from Jammu to Nagaland. There were reports of scrub typhus outbreaks in Himachal Pradesh, Sikkim and Darjeeling during 2003-2004 and 2007. The presence of spotted fevers and scrub typhus was documented from Tamil Nadu in southern India few years ago but there is limited data available in India.

DEMOGRAPHY

Scrub typhus is one of the causes of undifferentiated febrile illness in Asia pacific region. It is under diagnosed in many developing countries due to non specific symptoms, limited awareness and lack of diagnostic facilities. Untreated cases have fatality rates of 30-45%.[19]

A cross sectional observational study conducted in tertiary care hospital in Bangladesh by SS Nila from March 2019 to February 2020 enrolling 113 diagnosed cases showed majority of scrub typhus cases from rural areas (63.83%) with a slight female predominance (52.21%).[20] The young (32.74%) and the young-adult age group (28.31%) were mostly affected. Most of the scrub typhus cases were housewives (30.98%), followed by farmers (23.89%) and students (21.23%).

CLINICAL PRESENTATION

Incubation period usually varies from 6 to 21 days. Symptoms include fever, headache, muscle pain, cough, and gastrointestinal symptoms. Virulent strains cause hemorrhaging and intravascular coagulation. Leukopenia, abnormal liver function tests are seen in the early phase and pneumonitis, encephalitis, myocarditis occur in the late phase.

In a study conducted on spectrum of cardiac manifestations and its relationship to outcomes in patients admitted with scrub typhus by Gunasekaran Karthik, Thomas Isaiah Sudarsan and others in 2013 in 81 patients showed that cardiac manifestations are frequent and are associated with increased morbidity but not mortality.[21] Cardiac manifestations included electrocardiographic changes, pericarditis, myocarditis, and circulatory shock. Myocarditis occurred in 12.3% of the patients. Sinus tachycardia was the most common finding. Myocardial injury was seen in 61.7% of patients and LV systolic dysfunction in 30.9%.In addition, seven patients with regional wall motion abnormalities had LV systolic dysfunction and elevated cardiac enzymes. Mild diastolic dysfunction was observed in 18 (22%) patients with mild to moderate pericardial effusion in 51%.

A study on new onset atrial fibrillation predicting for complicating cardiac adverse outcome in scrub typhus by Suk-Yong Jang and others in 2016 in 2402 patients showed new-onset AF could be a poor prognostic factor for 3-month mortality and cardiac complications in scrub typhus infection.[22]

In a study by M Griffith in 2014 the incidence of organ dysfunctions in a cohort of 116 critically ill patients with scrub typhus revealed cardiovascular dysfunction in 61.7%.[23] Ninety one (85.2%) patients had multiple organ dysfunction and mechanical ventilation was needed in 102 (87.9%) patients. Severity of illness was evidenced by high APACH-II scores on admission. Thus patients should be treated aggressively from day one of admission.

In 2010 case control study in comparing severe scrub typhus with mild disease was done by Kim et al and it was observed that age more than or equal to 60 years, absence of eschar, leucopenia and hypoalbuminemia were associated with severe complications.[24] It is evident that patients with scrub typhus infection typically present with significant multiple organ dysfunction.The incidence of myocarditis associated with scrub typhus was unknown in these patients.

Sittiwangkul et al in his series of 4 patients with scrub typhus presenting with fulminant myocarditis in 2008, all 4 of them had evidence of myocarditis in the form of elevated cardiac enzymes and myocardial dysfunction.[25]

DIAGNOSIS

The gold standard is indirect immunofluorescence but main limitation is unavailability of diagnostic methods in resource limited areas.

Pinamonti et al in a retrospective study among 42 patients found biopsy proven myocarditis, studiedvarious cardiac findings.[26] Left ventricular dysfunction was most common finding.(69%). Left ventricular enlargement was minimal or absent. Right ventricular dysfunction occurred in 23% of the cohort. Patients who presented with history of chest pain or features of heart block had preserved normal ventricular size and function. Regional wall motion abnormalities were seen in 64% of the cohort. Left ventricular hypertrophy was seen in 15% of patients. Echocardiography is the key noninvasive method of detecting impaired ventricular function in suspected myocarditis.

TREATMENT

Chloramphenicol was the first drug reported to be effective in scrub typhus. It is the first line agent in many endemic areas. Intravenous doses or oral doses of 250 to 500 mg every sixth hourly is effective. The drug of choice is doxycycline which is 100 mg twice daily in IV or oral formulation for 1 week. Azithromycin is an alternative in childrenand pregnant women with scrub typhusand in doxycycline resistance.

LEPTOSPIROSIS

Leptospirosis is a worldwide zoonotic infection with more incidence in tropical regions and one of the emerging infectious diseases.The spectrum of human disease caused by leptospirosis is wide, ranging from subclinical infection to a severe syndrome of multiple organ involvement.

HISTORY

Leptospirosis was first described by physician Adolf Weil in 1886 in Germany.[27] It was postulated as a cause of an epidemic among Native Americans during 1616–19.Leptospirosis was observed in 1907 in a post mortem kidney tissue slice by Arthur Stimson using silver deposition staining technique.[28] Non-specific presentation accounts for large number of unrecognized cases. Andaman Islands is one of the endemic areas of the world and has documented incidence rate of 50/100,000.[29] A sero-survey by Indian Council of Medical Research, Leptospirosis Task Force, indicated high prevalence of leptospirosis and endemicity in India.[30]

EPIDEMIOLOGY

The infection is estimated to cause one million cases and around 58,900 deaths annually, with a case fatality ratio of 6.85%.[31] It is found in both urban and rural areas in tropical, subtropical,and temperate regions.Disability-adjusted life year is 42 per 100,000 people per year.[32] The disease is prevalent in parts of Asia, Oceania, the Caribbean, Latin America and Africa. Research on epidemiology of leptospirosis in high-risk groups and risk factors is limited in India. Outbreaks of leptospirosis have been increasing in India for the past three decades. The positivity rate for the disease is notable in the southern part of India at 25.6%, followed by 8.3%, 3.5%, 3.1%, and 3.3% in northern, western, eastern and central India, respectively.[33] Malnutrition, lack of micronutrients may lead to increased risk of infection.

DEMOGRAPHY

Leptospirosis has no age predilection, but severe form of the disease is common in the age group of ≤ 5 years or ≥ 65 years. Due to high occupational exposure incidence in male is more than female. It is an occupational hazard for people who work outdoors or with animals, for example, farmers, sewer workers, veterinarians, fish workers, dairy farmers, or military personnel. The case-fatality rate of severe leptospirosis is as low as 6%if there is prompt access to vasopressors,

renal replacement therapy and mechanical ventilation but it can rise to greater than 50% if the delivery of this supportive care is delayed.[34]

A cross sectional study by RS Kembhavi et al in 2021on epidemiological determinants was done in 408 patients.[35] A total of 63 (62.4%) were males and 38 (37.6%) were females. Most cases belonged to the 20–35 year age group (37%). In rural areas, 32.7% of them visited government facilities first, whereas, in the urban areas, it was 73.9% (P = 0.006). Headache, myalgia, and prostration were more common in cases from rural areas (P = <0.05). Skin rash was found to be associated with urban cases of leptospirosis. The presence of rodents, cattle sheds, pets, and working in paddy fields were common environmental risks in rural areas, and using water for recreational activities were common in urban areas (P < 0.001).

CLINICAL PRESENTATION

The disease begins with fever accompanied by chills, intense headache, severe muscle aches and abdominal pain. A rash is rarely found in leptospirosis. It can also involve the heart causing various echocardiogram abnormalities such as pericardial effusion, myocarditis, pericarditis and arrhythmias.[36]

In a study conducted by Kinjal Shah, Gayathri PA, Rima NK, Jaya RD on cardiac findings in leptospirosis in 2010 in 24 patients it was observed that endocardial inflammation correlates with vasculitis, which is the principal pathogenic mechanism of the disease.[37] Cardiac complications are frequent in severe leptospirosis ranging from low voltage complexes, non-specific ST and T wave changes and conduction defects. Atrial fibrillation is the most common arrhythmia observed. Severe manifestations such as cardiomegaly, cardiac failure and severe arrhythmias due to hemorrhagic myocarditis are observed. All cardiac abnormalities revert to normal within 2 to 3 weeks. Other cardiac abnormalities include myocarditis and AV block which occurred in 44% of patients.

A study on cardiac involvement in leptospirosis by Mitrakrishnan RN, Senaka R in 2012 showed that complications such as chest pain, arrhythmias, pulmonary oedema and refractory shock have been reported in patients with severe disease.[38]

A study on cardiac manifestations of leptospirosis by Anoop Mathew, Miriam Shanks, Eapen Punnoose, Louie Fischer, George Koshy and Kevin R Bainey in 113 patients showed that cardiac complications appear similar tosepsis syndrome with myocardial systolic dysfunction which occurs frequently.[39]

Cardiovascular involvement was studied by C Rajiv et al in 50 patients with serologically proved leptospirosis.[40] Twelve (24%) patients had dyspnoea and 18 (36%) had transient hypotension during the illness. Electrocardiographic abnormalities occurred in 70 percent of patients. Atrial fibrillation was the most common major arrhythmia (14%). Conduction system abnormalities were seen in 36 percent of patients. T-wave changes were observed in 30 percent of patients.

DIAGNOSIS

Serological tests with varying sensitivity and specificity are available but ELISA IgM has been considered the most accurate test. Rapid detection of leptospira can be done by quantifying the IgM antibodies using ELISA. The presence of other diseases such as Epstein–Barr virus infection, viral hepatitis, and cytomegalovirus infection can cause false-positive results. Polymerase chain reaction detects the presence of leptospiral DNA in blood. Thus it is very sensitive and specific test in acute phase of illness.

TREATMENT

In 2001, the WHO recommended oral doxycycline for five to seven days for those with mild leptospirosis. Tetracycline, ampicillin, and amoxicillin can also be used. In areas where rickettsia and leptospirosis are both endemic, azithromycin and doxycycline are the drugs of choice. Based on a 1988 study, intravenous (IV) benzylpenicillinis recommended for the

treatment of severe leptospirosis. Use of intravenous corticosteroid therapy has been suggested in view of vasculitic nature of severe leptospirosis but limited data is available for routine use of corticosteroids. Pregnant women can be managed effectively with penicillin, ceftriaxone, cefotaxime, or azithromycin.

MALARIA

Malaria is endemic in developing countries. The WHO African Region had 95% of malaria cases and 96% of deaths in 2021.The World Malaria Report 2020 released by WHO indicated that India has made progress in reducing its malaria burden. India is the only high endemic country which has reported a decline of 17.6% in 2019 as compared to 2018.The Annual Parasitic Incidence (API) reduced by 27.6% in 2018 compared to 2017 and by 18.4% in 2019 as compared to 2018.[41] India has sustained API less than one since year 2012.India has also contributed to the largest drop in cases region-wide, from approximately 20 million to about 6 million. The percentage drop in the malaria cases was 71.8% and deaths was 73.9% between 2000 to 2019.[41] Early diagnosis and complete treatment has led to decline in malaria cases in India.

EPIDEMIOLOGY

States of Odisha, Chhattisgarh, Jharkhand, Meghalaya and Madhya Pradesh accounted for nearly 45.47 percent (1,53,909 cases out of India's 3,38,494 cases) of malaria cases and 70.54 percent (1,10,708 cases out of India's 1,56,940 cases) of falciparum. Malaria cases in 2019. 63.64% (49 out of 77) of malaria deaths were also reported from these states. Thelow education levels, agriculture and rural residence increases the odds of malaria. The major housing determinants affecting incidence and prevalence are household size, type, use of unclean fuel, water source, unhygienic sanitation and clogged water drains.

DEMOGRAPHY

A cross sectional study by AO Ibrahim et al in· 2022, 330 consented adult febrile patients were recruited at a tertiary health facility in rural

southwestern Nigeria.[42] The study showed prevalence of malaria parasitemia was 63.3% (95% confidence interval: 57.9%–68.5%). Being a farmer ($p = 0.002$), lack of formal education ($p = 0.043$), low-income earners ($p = 0.031$), presence of bushes ($p = 0.048$), stagnant water ($p = 0.042$), not sleeping under long-lasting insecticide-treated nets ($p < 0.001$), and sickle cell disease ($p = 0.041$) were significantly associated with malaria infection.

In a study by S Pradhan et al in Purulia district of West Bengalfrom, January 1, 2016, to December 31, 2020 it was found that majority of cases (72.63%) were found in ≥ 15-year age group and males were more prone to malaria (60.09%).[43]

CLINICAL PRESENTATION

Specific cardiovascular complications include electrocardiogram abnormalities, myocarditis, pericarditis, pericardial effusion, ischemic disease, and heart failure Possible theories related to the pathophysiological mechanisms related to cardiovascular compromise include an imbalanced pro-inflammatory cytokine response and/or erythrocyte sequestration by increased cytoadherence to endothelium.[44] Hypotension, shock and circulatory collapse with impaired hemodynamic function have been seen in severe malaria patients.

In 2004 and 2005, Ehrhardt et al have demonstrated raised cardiac enzymes in complicated malaria.[45] Yacoub et al assessed ejection fraction by echocardiography which significantly reduced on admission compared with discharge.[46] Direct toxic effects of bacterial agents as well as excessive production of cytokines and immune mediators have been identified to cause cardiac dysfunction.

In another study in 2011 by Paola Costenaro et al, the serum concentration of cardiac troponin-T was found to be elevated only in a very low (0.6%) proportion of patients.[47] ECG-specific abnormalities such as, delayed conduction and/or T or ST alterations were observed in 14.3% of the patients, suggesting that the electrophysiology of cardiac myocytes

can be altered before myocytolysis occurs. The clinical features include myocarditis, ECG changes such as ectopics, conduction defects, tachyarrhythmia, bradyarrhythmia or echocardiography showing reduced cardiac output.

Franzen et al studied 22 patients without previous history of cardiac disease.[48] They prospectively evaluated cardiac involvement during acute malaria and after recovery. During the acute phase ECG abnormalities were common (5/22); pericardial effusion was found in two patients and global left ventricular hypokinesia in one patient infected with P. falciparum. At the follow-up of 19 patients, the resting ECG and echocardiography were normal or had normalized in all patients. The results suggest that persistent cardiac damage following malarial infection seems to be reversible.

Several markers of hemodynamic compromise were noted by Yacoub et al on admission, including severe tachycardia, low stroke volume index, and high inferior vena cava collapsibility index, which improved subsequently.[46] The indices at admission and discharge respectively are: ejection fraction (63.1 ± 5.2% vs 71.9 ± 2.8%; $p < 0.001$) and left myocardial performance index (0.32 ± 0.16 vs 0.25 ± 0.08; $p = 0.03$). Critical patients had worse hemodynamic indicators, with a significantly higher inferior vena cava collapsibility index on Day 0 than non-acidotic patients (52.1 ± 21 .9 vs 37.7 ± 15.4; $p = 0.03$), plus lower stroke volume index and worse cardiac function with higher left myocardial performance index (0.38 ± 0.18 vs 0.26 ± 0.11; $p = 0.05$).

DIAGNOSIS

Malaria parasites can be identified by examining under the microscope using giemsa stain. This technique remains the gold standard for laboratory confirmation of malaria. Rapid Diagnostic Tests is alternative to microscopy where reliable diagnostic facilities are not available. Malaria RDTs are currently used in various control programs. They are

monoclonal antibodies and detect antigens including the histidine-rich protein II, aldolase, and parasite lactate dehydrogenase .

TREATMENT

Malaria is a treatable disease, artemisinin-based combination therapies (ACTs) are the most effective antimalarial medicines available today and the mainstay of recommended treatment for Plasmodium falciparum malaria. Artesunates can be given in intravenous or intramuscular route. They do not require dose modification in renal or liver dysfunction. They are safe in pregnancy. In complicated malaria involving cardiogenic dysfunction, use of ionotropes, guarded fluids and electrolytes monitoring helps in the management of patients.

DENGUE

Dengue fever is a vector-borne tropical disease caused by dengue virus transmitted to humans via Aedes aegypti mosquito. Almost half of the world's population (4 billion people) live in areas with a risk of dengue.[49] The primary vectors transmitting the disease are Aedes aegypti mosquitoes and, to a lesser extent, Ae. albopictus. The virus responsible for causing dengue, is called dengue virus (DENV) which has four DENV serotypes (DENV-1, DENV-2, DENV-3 and DENV-4).

EPIDEMIOLOGY

50-100 million cases are reported in more than 100 endemic countries of Africa, America, Eastern Mediterranean, South-East Asia and Western Pacific.[50] Unplanned urbanization, inadequate water and waste management , increased distribution and density of vector and lack of effective control of vectors facilitates easy spread of infection. The epidemiology of dengue fevers in the Indian subcontinent has been very complex and has substantially changed over almost past six decades in terms of prevalent strains, affected geographical locations and severity of disease. The very first report of existence of dengue fevers in India was way back in 1946. Dengue is highly prevalent in the northern states of

India, and the highest prevalence has been observed in Delhi (5.6%), followed by Dadra & Nagar Haveli (3.3%) and Chandigarh (3.1%).[51]

DEMOGRAPHY

A retrospective study by KMR Prattay et al on the socio-demographic factors and clinical parameters of dengue was done and it showed that majority of the cases (73.33%) were between the ages of 18 and 40.[52] Age groups of 41–60 years and <18 years were presented with 15.24% and 9.52% of cases respectively while the least percentage of cases (1.90%) were exhibited by patients >60 years of age. Although the gender distribution across the four age groups was statistically the same ($p > 0.05$), majority (68.75%) of the total dengue cases were found to be male. Additionally, it was found that people of urban area (54.35%) were infected more than the rural region of the country.

In study by R Nayak et al in 2021 majority of the patients were males (81.9%) and ≥15 years old (91.7%).[53] About 68.5% were from rural areas and belonged to low socio-economic status (53.2%). Cases were reported mostly in peri-monsoon periods and 65.7% of them came directly to the hospital.

In a study of 60 patients by PV Papalkar et al in 2019, 36 (60%) were male and 24 (40%) were female, and the male-to-female ratio was 1.5:1.[54] The mean age of the patients was 38 ± 16.69 years. The most common ECG abnormality was sinus bradycardia seen in 9 (15%) patients, followed by sinus tachycardia in 6 (10%) and ST-T changes in 5 (8.33%). Echocardiography was normal in 54 (90%) patients, systolic dysfunction was found in 4 (6.67%) patients, and pericardial effusion was found in 2 (3.33%) patients. Eight (13.33%) patients had abnormal creatine kinase-muscle/brain values.

CLINICAL FEATURES

Clinical features suggesting cardiac involvement in dengue are in wide range varying from chest pain, palpitations, irregularities of pulse, to

hypotension, pulmonary edema, tachycardia and shock. Sinus bradycardia, transient ventricular arrhythmias, prolongation of PR interval, nonspecific ST-segment and T-wave changes, and transient atrioventricular blocks, intraventricular conduction delays, atrial fibrillation, QTc prolongation are some of the cardiac findings seen in complicated dengue fever. Dengue virus infection affects the heart structurally and functionally. Clinical manifestations of cardiac complications secondary to dengue virus infection vary from self-limiting arrhythmias to severe myocardial infarction, leading to hypotension, pulmonary edema, and cardiogenic shock.

In a study on cardiac manifestations of dengue fever by Goutam Datta and others in 2019 it was seen that cardiac manifestations in 120 patients included asymptomatic sinus bradycardia, transient AV blocks, transient ventricular arrhythmias, myocarditis and pericardial effusion.[55]

In a study conducted by Mohit Arora and Rekha S Pati in 2016 cardiac involvement was analyzed in 120 patients of dengue fever.[56] It was observed that patients with dengue fever are at higher risk of developing myocarditis and rhythm disturbance and therefore require a close cardiac monitoring.

In a study by C Mansanguan in 2021, 81 patients were evaluated and 6 (7.41%) exhibited elevated biomarker levels.[57] Cardiac involvement was found in 22.2% of patients: 3 (3.70%) had left ventricular systolic dysfunction, 3 (3.70%) had transient diastolic dysfunction, 6 (7.41%) had increased levels of at least one cardiac biomarker (troponin-T or CPK-MB), and 6 (7.41%) had small pericardial effusion. Myocarditis was suspected in only two patientsthus, myocarditis was uncommon in patients with dengue virus infection.

A study by S Sheetal et al on the Cardiac Manifestations of Dengue was conducted is a tertiary care hospital in 2013.[58] The minimum pulse rate recorded was 34 per minute. The most common cardiac abnormalities reported were rhythm abnormalities of which the commonest was sinus

bradycardia, found in 32 percent. There was no evidence of myocarditis in any of the patients.

DIAGNOSIS

For patients with suspected dengue virus disease, NAATs are the preferred method of laboratory diagnosis. NAATs should be performed on serum specimens collected 7 days or less after symptom onset. Presence of virus by rRT-PCR or NS1 antigen in considered laboratory confirmation of dengue in patients. IgM antibody testing can identify additional infections and is an important diagnostic tool. However, interpreting the results is complicated by cross-reactivity with other flaviviruses, like Zika, and determining the specific timing of infection can be difficult. IgG detection by ELISA is not used for diagnostic testing because it remains detectable for life after a dengue virus infection.

TREATMENT

IV fluids and supportive care is treatment of choice. In cardiogenic and hypovolumic shock ionotropic support, fluids and blood transfusions remains mandatory with 24 hours strict cardiac monitoring. IVC monitoring helps in fluid management. Serial ECG and 2D echo are preferred in assessing outcome.The inflammatory response and it’s cardiac effect is acute and reversible and no specific guidelines are recommended for its management. Role of drugs like calcium channel blockers and beta-blocker in arrhythmias is controversial.

MATERIALS AND METHODS

This prospective study was conducted in the department of Medicine, Dayanand Medical College and Hospital from 1 March 2021 to 28 February 2022. 300 patients of tropical fever were enrolled this in study.

SOURCE OF DATA

This study was carried out in-hospitalized patients in DMC and Hospital. Patients with cardiac manifestations were included in this study. ECG, 2D echocardiographic findings, x ray findings and biochemical profile were recorded and analyzed

METHOD OF COLLECTION OF DATA

Inclusion Criteria:

- Age group >18 yrs
- Willing to consent and participate in study
- Tropical fever with confirmed diagnosis
- (Antigen/serology positive)
- Lab findings with raised cardiac markers, abnormal ECG or Echo

Exclusion Criteria

- Age group < 18yrs
- Tropical fever without cardiac manifestations
- Acute febrile illnesses other than tropical fever

DURATION OF STUDY- 1 Year

OUTCOME- To assess incidence of cardiac complications such as tachycardia/bradycardia, atrioventricular blocks, ventricular arrhythmias, pericarditis, myocarditis, endocarditis and acute coronary events (STEMI/ NSTEMI/ Unstable Angina) in tropical fever and it's correlation to outcome.

INVESTIGATIONS

Basic investigations like cbc, lft, rft, chest xray, ecg were done in all patients. In suspected tropical fever patients specific serology tests were done. Abg, sob profile, serial ECG, 2 D echo were done in complicated cardiac patients of tropical fever.

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ± standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done 9using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

OBSERVATION AND RESULTS

A total of consenting 300 patients were enrolled in this study. Biochemical profile, X ray, ECG and 2D echo findings were analyzed in various tropical fevers including dengue, leptospirosis, scrub typhus and malaria.

CLINICAL CHARACTERSTICS

TABLE 1: AGE WISE DISTRIBUTION OF PATIENTS

Age group	No. of cases	Percentage
18-30	79	26.3%
31-40	61	20.3%
41-50	58	19.3%
51-60	49	16.3%
61-70	36	12.0%
> 70	17	5.7%
Total	300	100.0%

Patients included in this study were above 18 years of age.

Most patients (79) in our study were in the age group between 18-30 years (26.3%). The mean age of presentation was 43.75 ± 16.36 years.

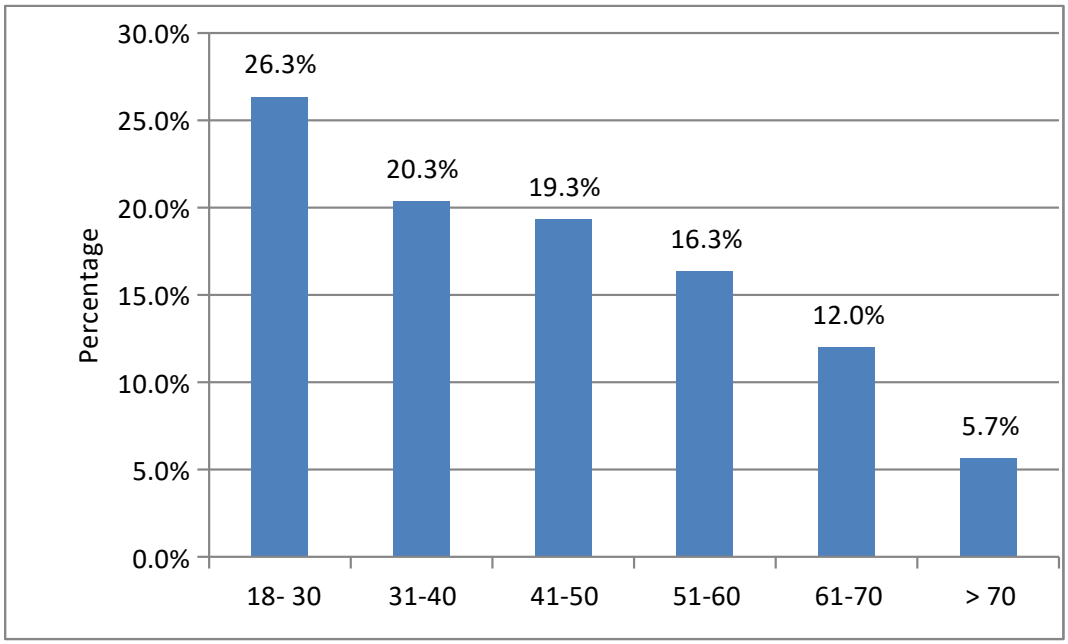

FIGURE 1: AGE WISE DISTRIBUTION OF PATIENTS

TABLE 2: GENDER WISE DISTRIBUTION OF PATIENTS

Sex	No. of cases	Percentage
F	121	40.3%
M	179	59.7%
Total	300	100.0%

In our study, there were 121 females (40.3%) and 179 males(59.7%) out of 300 patients. The male: female ratio in our study was 1.4 suggesting tropical fevers are predominantly seen in male population.

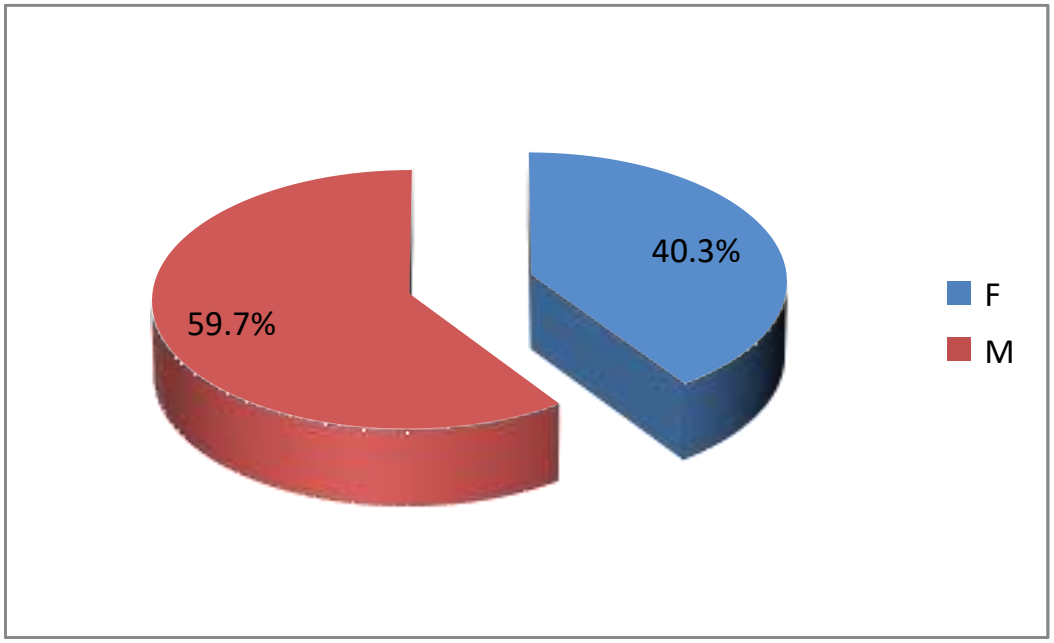

FIGURE 2: GENDER WISE DISTRIBUTION OF PATIENTS

TABLE 3: SEROLOGY WISE DISTRIBUTION

	No. of cases	Percentage
DENGUE	207	69.0%
DENGUE/LEPTOSPIROSIS	3	1.0%
DENGUE/SCRUB TYPHUS	9	3.0%
LEPTOSPIROSIS	26	8.7%
LEPTOSPIROSIS/SCRUB TYPHUS	5	1.7%
MALARIA	2	0.7%
MALARIA/SCRUB TYPHUS	1	0.3%
SCRUB TYPHUS	47	15.7%
Total	300	100.0%

In our study serology wise distribution was done and overlapping of serology profile was observed. 69% of patients were dengue serology positive. 8.7% were leptospirosis positive. Malaria came in 0.7 % of patients. Scrub typhus serology was positive in 15.7% of patients. Dengue with leptospirosis serology came positive in 1 % of patients. Dengue with scrub typhus serology was found to be positive in 3% of patients. Leptospirosis with scrub typhus serology was positive in 1.7 % patients. Malaria with scrub typhus serology was positive in 0.3% patients.

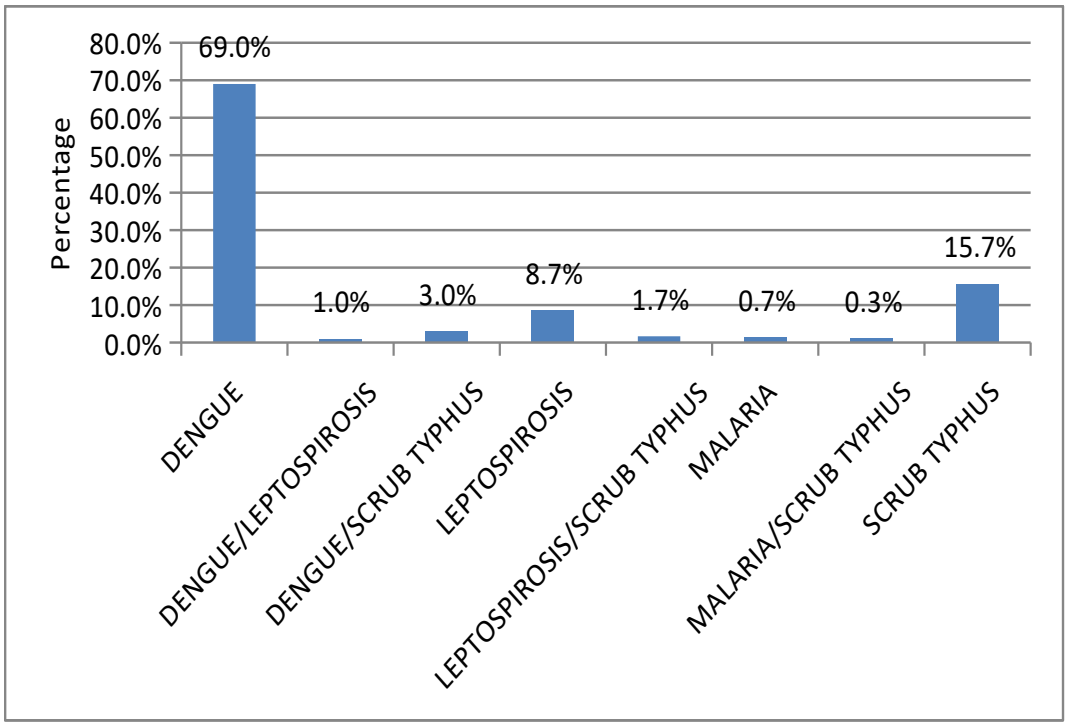

FIGURE 3: SEROLOGY WISE DISTRIBUTION

TABLE 4: RHYTHM ABNORMALITIES DISTRUBTION IN TROPICAL FEVER

RHYTHM	No. of cases	Percentage
1 DEGREE AV BLOCK	4	1.3%
VT	2	0.7%
SVT	8	2.7%
JUNCTIONAL RHYTHM	8	2.7%
SINUS ARRHYTHMIA	11	3.7%
ATRIAL FIBRILLATION	5	1.7%
PREMATURE COMPLEXES	18	6.0%
INTRAVENTRICULAR CONDUCTION DELAYS	21	7.0%
SINUS BRADYCARDIA	24	8.0%
SINUS TACHYCARDIA	136	45.3%

Various rhythm abnormalities were seen in these patients.

Sinus tachycardia (45.3%) was present in 136 patients out of 300 patients. Sinus bradycardia (8%) was seen in 24 patients. 7% of patients had intraventricular conduction delays. Premature complexes were seen in 6% of patients.

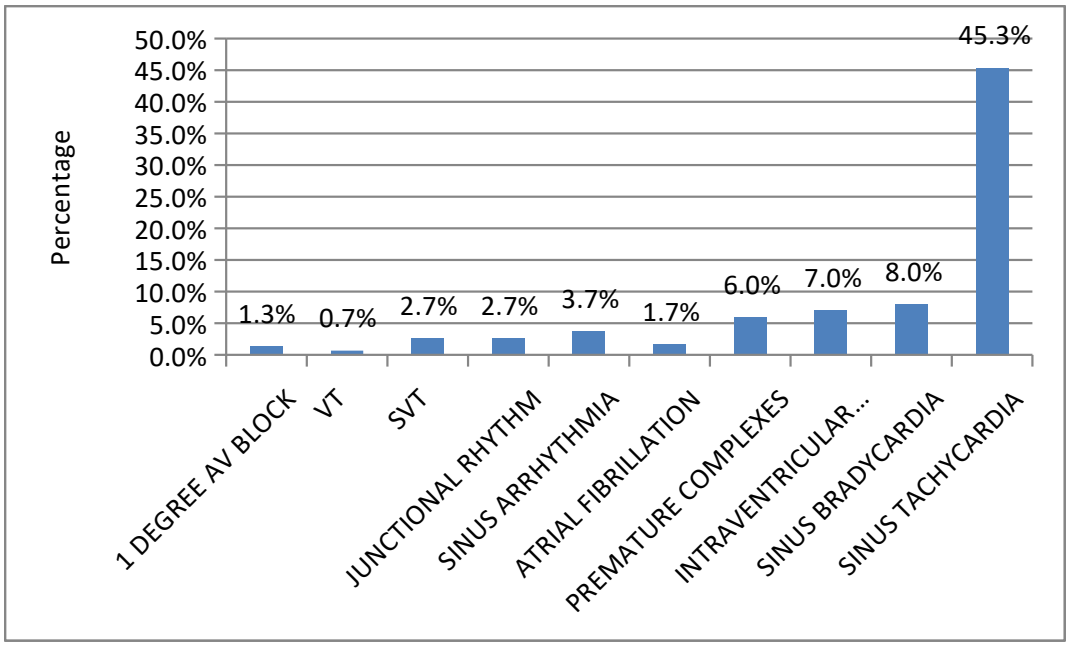

FIGURE 4: RHYTHM ABNORMALITIES IN TROPICAL FEVER

TABLE 5A: T WAVE INVERSION DISTRIBUTION IN PATIENTS

T WAVE INVERSION	No. of cases	Percentage
NO	298	99.3%
YES	2	0.7%
Total	300	100.0%

TABLE 5B: NSTEMI DISTRIBUTION IN PATIENTS

NSTEMI	No. of cases	Percentage
NO	299	99.7%
YES	1	0.3%
Total	300	100.0%

TABLE 5C: STEMI DISTRIBUTION IN PATIENTS

STEMI	No. of cases	Percentage
NO	291	97.0%
YES	9	3.0%
Total	300	100.0%

T wave inversion was in 0.7 %(2 OUT 300) of patients. 0.3 % (1 OUT 300) had NSTEMI and 3% (9 out of 300) had STEMI changes in ECG.

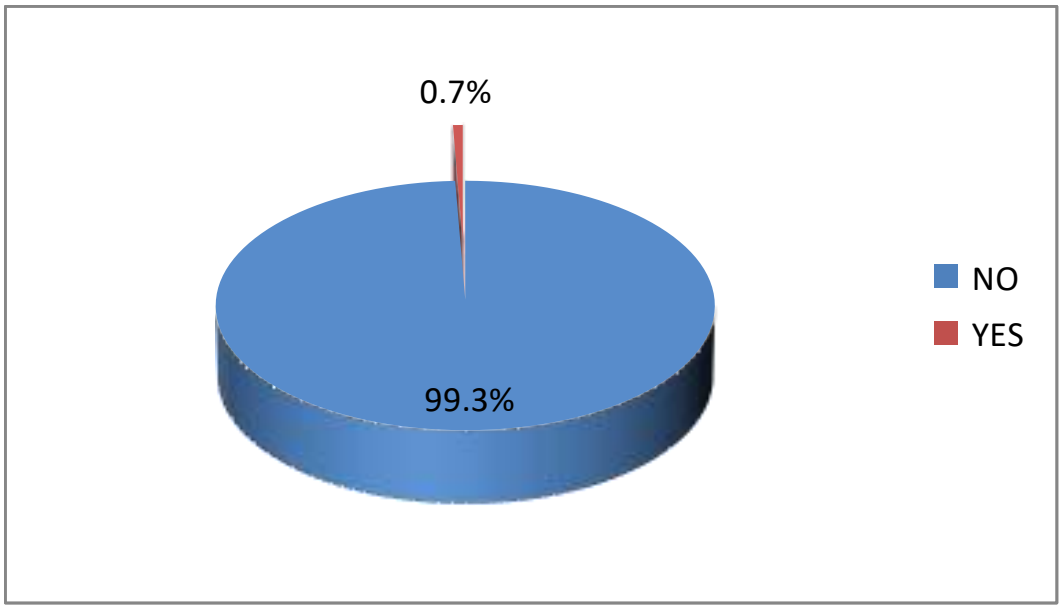

FIGURE 5A: T WAVE INVERSION DISTRIBUTION IN PATIENTS

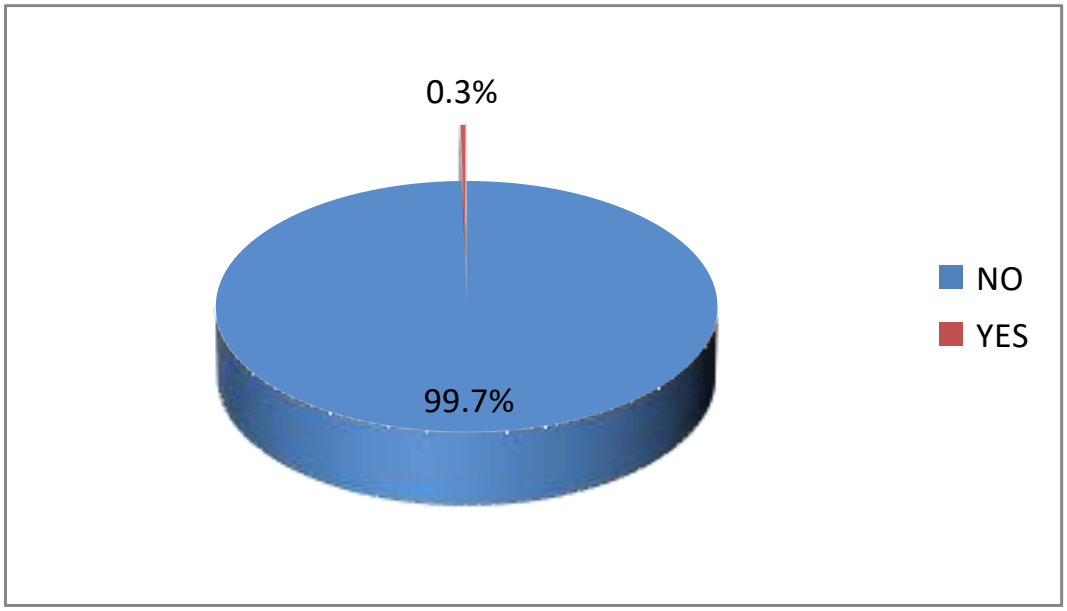

FIGURE 5B: NSTEMI DISTRIBUTION IN PATIENTS

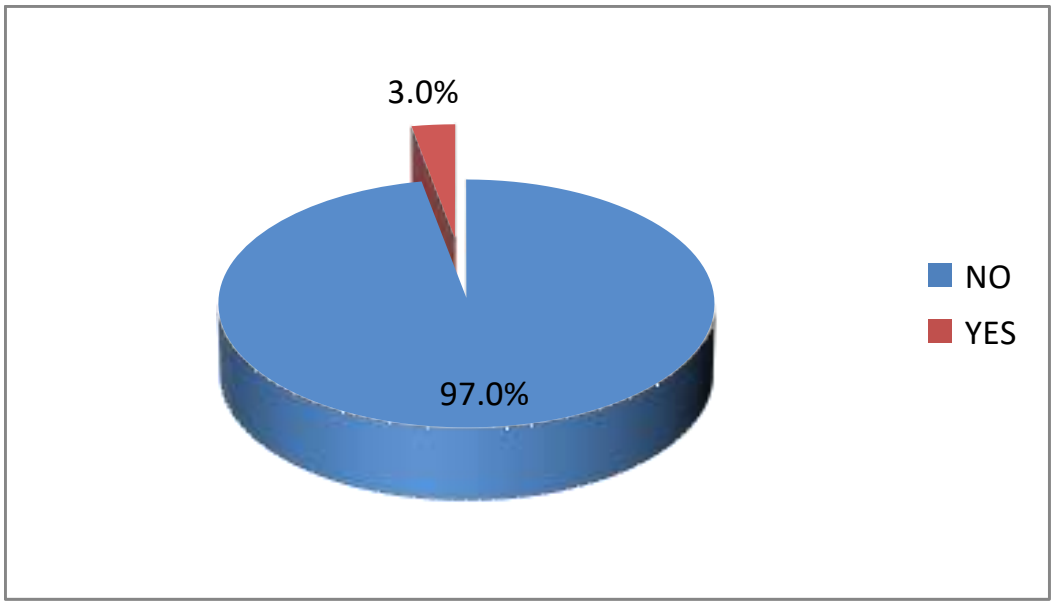

FIGURE 5C: STEMI DISTRIBUTION IN PATIENTS

TABLE 6: PERICARDIAL EFFUSION DISTRIBUTION IN PATIENTS

PERICARDIAL EFFUSION	No. of cases	Percentage
MILD	6	2.0%
MINIMAL	9	3.0%
NO	285	95.0%
Total	300	100.0%

In our study minimal pericardial effusion was seen in 9 patients (3%) out of 300. Mild effusion was present in 2% of patients (6 out 300)

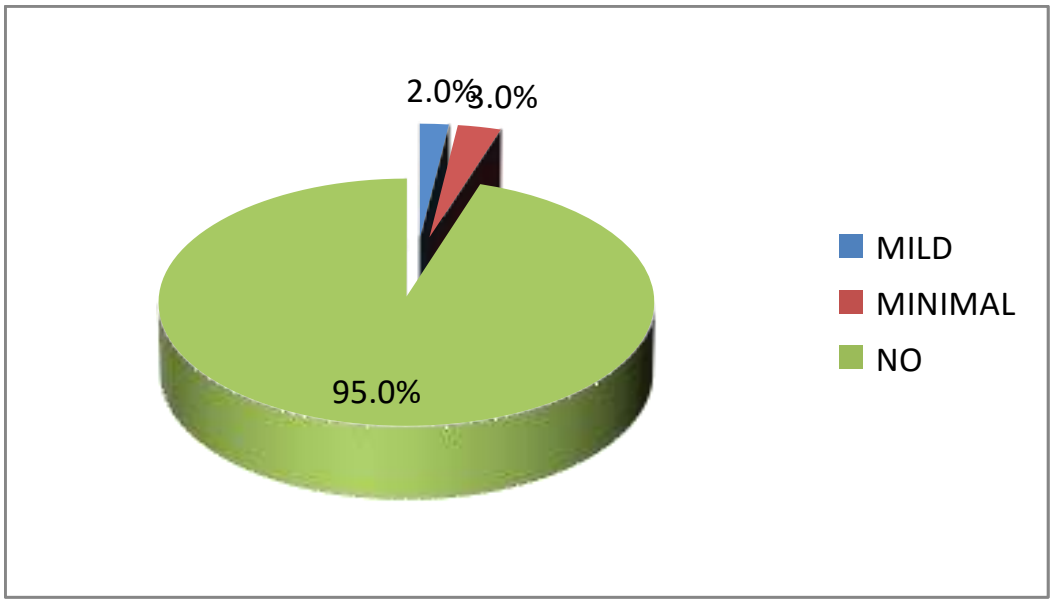

FIGURE 6: PERICARDIAL EFFUSION DISTRIBUTION IN PATIENTS

TABLE 7: PLEURAL EFFUSION DISTRIBUTION IN PATIENTS

PLEURAL EFFUSION	No. of cases	Percentage
MILD	50	16.7%
MODERATE	26	8.7%
NO	224	74.7%
Total	300	100.0%

In a study of 300 patients mild pleural effusion was seen in 50 patients (16.7%). Moderate effusion was present in 8.7% of patients (26 out 300).

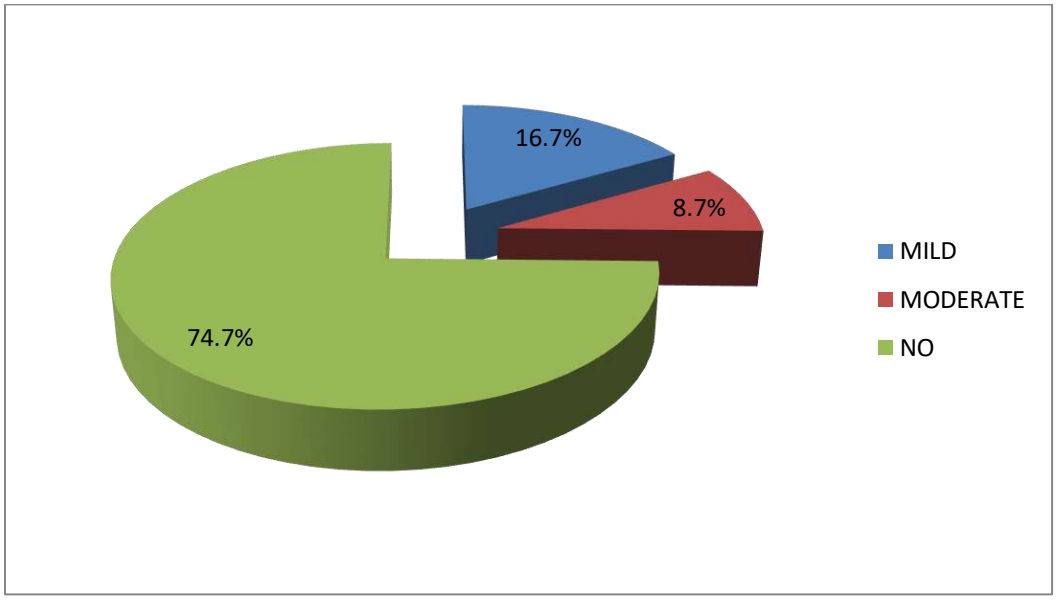

FIGURE 7: PLEURAL EFFUSION DISTRIBUTION IN PATIENTS

TABLE 8: RWMA DISTRIBUTION IN PATIENTS

RWMA	No. of cases	Percentage
NO	295	98.3%
YES	5	1.7%
Total	300	100.0%

Regional wall motion abnormalities was found in 5 patients out of 300 (1.7%) patients diagnosed with tropical fever.

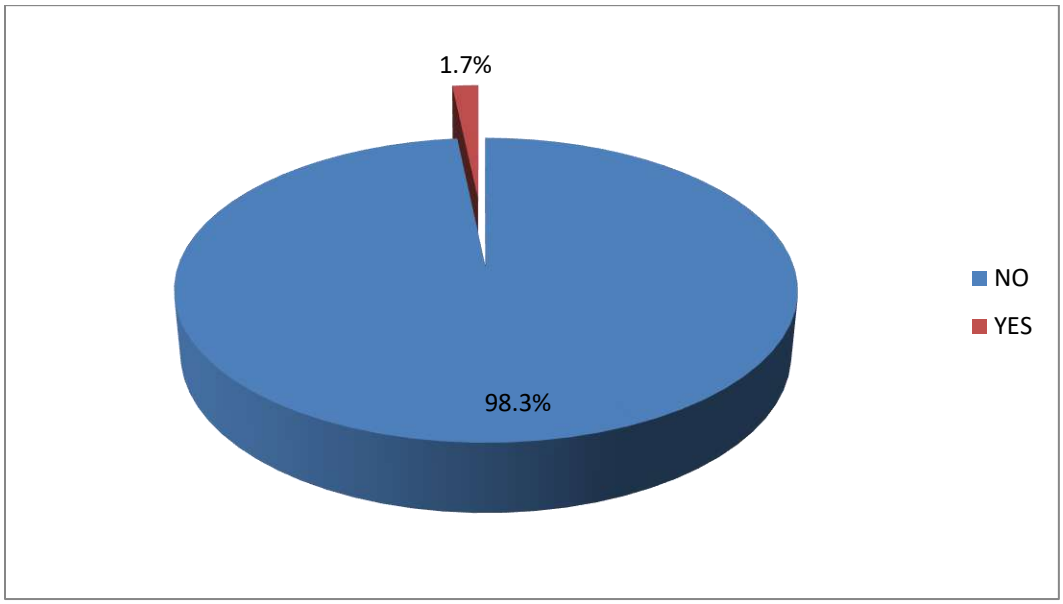

FIGURE 8: RWMA DISTRIBUTION IN PATIENTS

TABLE 9A: MITRAL REGURGITATION DISTRIBUTION IN PATIENTS

MR	No. of cases	Percentage
MILD	2	0.7%
MODERATE	1	0.3%
NO	297	99.0%
Total	300	100.0%

TABLE 9B: TRICUSPID REGURGITATION DISTRIBUTION IN PATIENTS

TR	No. of cases	Percentage
MILD	5	1.7%
NO	295	98.3%
Total	300	100.0%

In this study mild TR was present in 5 patients out of 300 (1.7%). Mild MR was seen in 2 patients (0.7%) and moderate MR in 1 patient (0.3%).

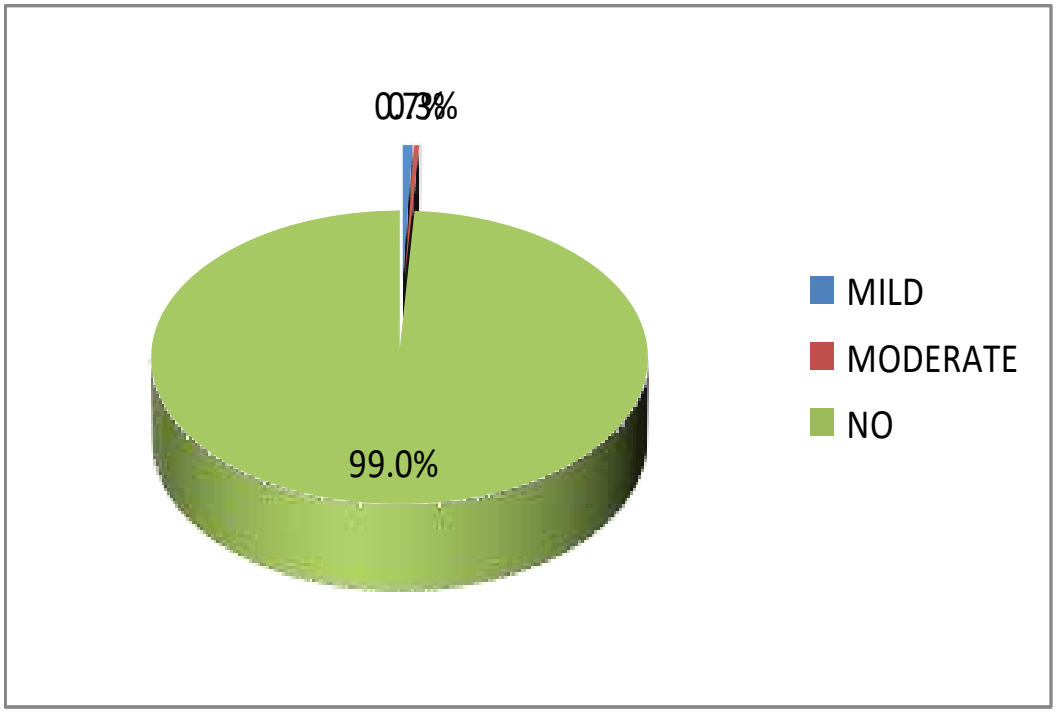

FIGURE 9A: MITRAL REGURGITATION DISTRIBUTION IN PATIENTS

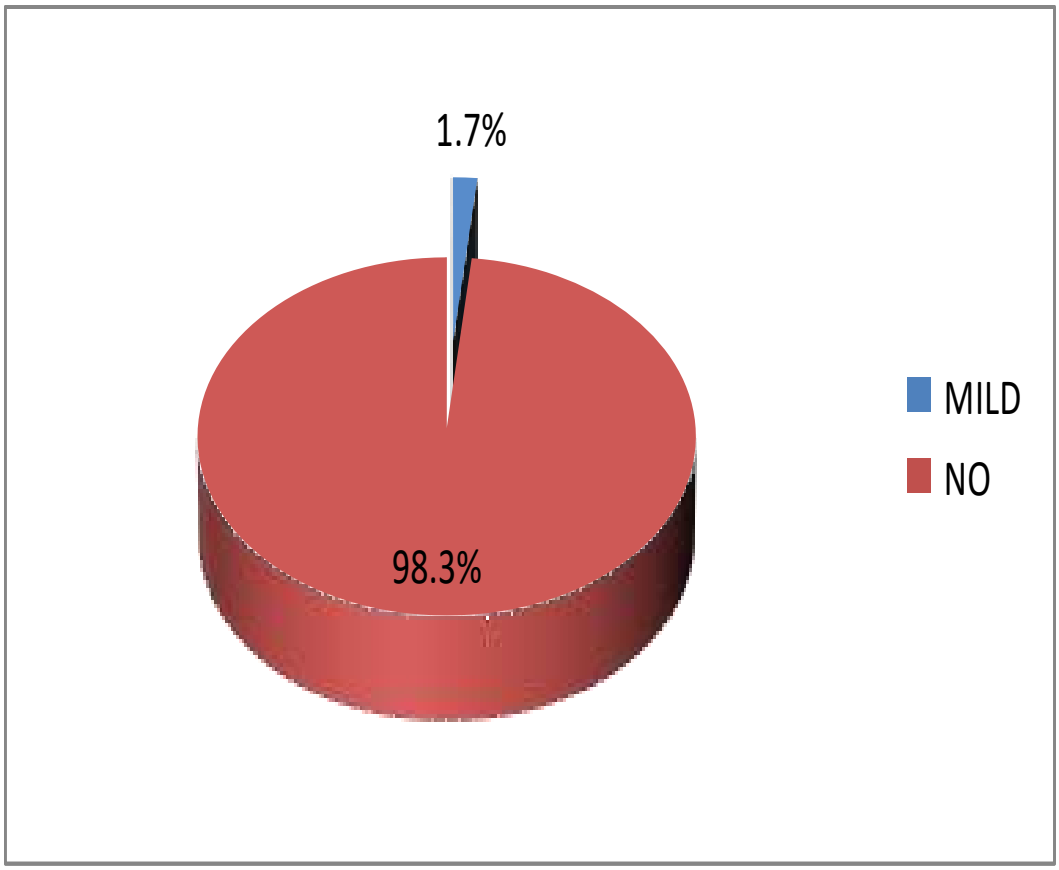

FIGURE 9B: TRICUSPID REGURGITATION DISTRIBUTION IN PATIENTS

TABLE 10: GLOBAL HYPOKINESIA DISTRIBUTION IN PATIENTS

GHK	No. of cases	Percentage
GHKLV	19	6.3%
NO	281	93.7%
Total	300	100.0%

19 patients out of 300 patients of tropical fever were found to have global hypokinesia of left ventricle.

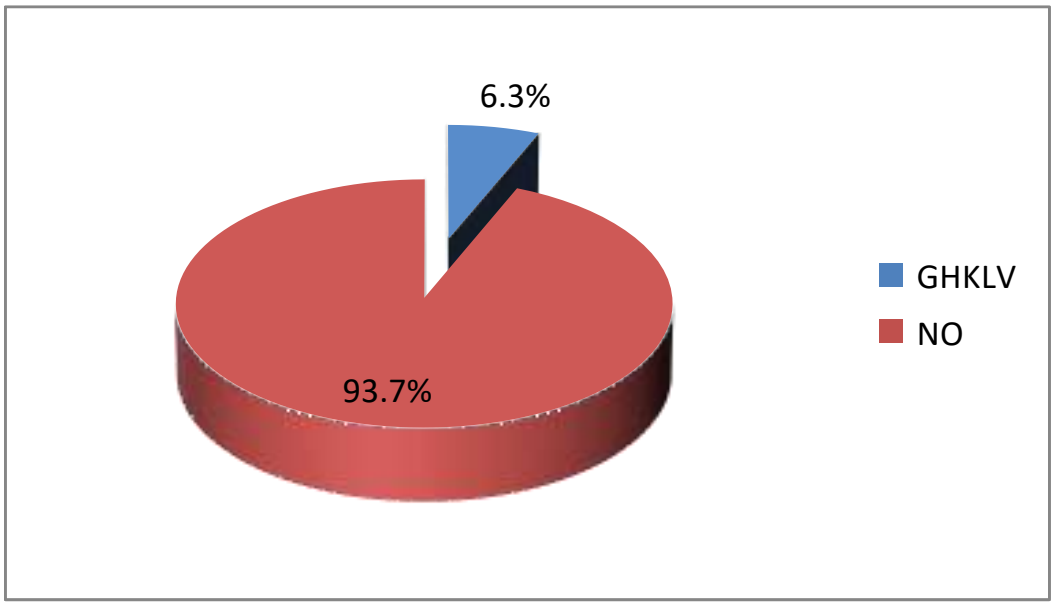

FIGURE 10: GHK DISTRIBUTION IN PATIENTS

TABLE 11: RHYTHM ABNORMALITIES IN DENGUE PATIENTS

		DENGUE				Total	Chi-square value	p-value
		NO		YES				
1 DEGREE AV BLOCK	YES	1	1.2%	3	1.4%	4	0.008	0.985
VT	YES	0	0.0%	2	0.9%	2	0.745	0.388
SVT	YES	3	3.7%	5	2.3%	8	0.460	0.498
JUNCTIONAL RHYTHM	YES	2	2.5%	6	2.7%	8	0.017	0.897
SINUS ARRHYTHMIA	YES	3	3.7%	8	3.7%	11	0.000	0.983
ATRIAL FIBRILLATION	YES	3	3.7%	2	0.9%	5	2.809	0.124
PREMATURE COMPLEXES	YES	3	3.7%	15	6.8%	18	1.037	0.308
INTRAVENTRICULAR CONDUCTION DELAYS	YES	3	3.7%	18	8.2%	21	1.852	0.174
SINUS BRADYCARDIA	YES	3	3.7%	21	9.6%	24	2.783	0.148
SINUS TACHYCARDIA	YES	46	56.8%	90	41.1%	136	9.035	0.011
ST DEPRESSION	NO	81	100.0%	219	100.%	300		
TWAVE INVERSION	NO	79	97.5%	219	100.0 %	298	5.444	0.072
	YES	2	2.5%	0	0.0%	2		
NSTEMI	NO	81	100.0%	218	99.5%	299	0.371	0.543
	YES	0	0.0%	1	0.5%	1		
STEMI	NO	80	98.8%	211	96.3%	291	1.188	0.276
	YES	1	1.2%	8	3.7%	9		
Total		81	100.0%	219	100.0 %	300		

Sinus tachycardia (90 out of 219 dengue patients) was found to be most common finding in dengue fever and it was significant (p value 0.011) as compared to other tropical fevers. Intraventricular conduction delays (8.2%) were more in dengue patients as compared to other fevers

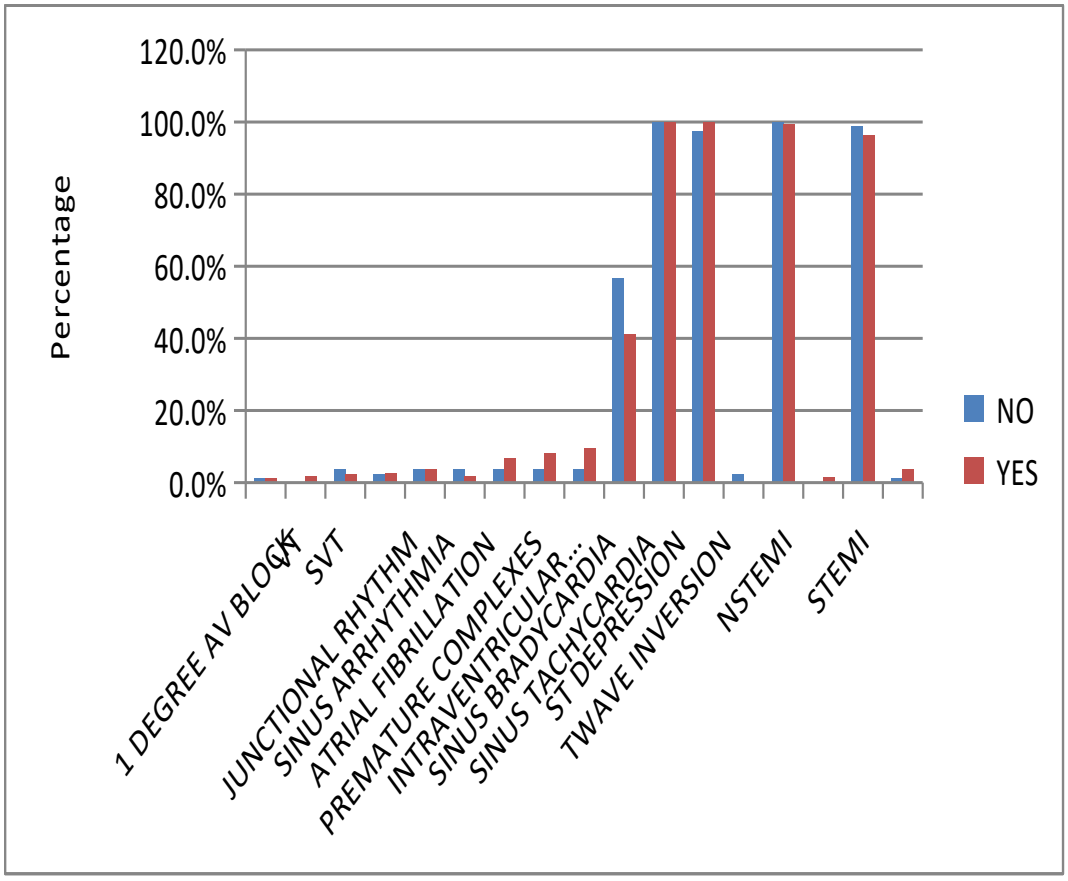

FIGURE 11: RHYTHM ABNORMALITIES IN DENGUE PATIENTS

TABLE 12: XRAY FINDINGS IN DENGUE FEVER

		DENGUE				Total	Chi-square value	p-value
		NO		YES				
PERICARDIAL EFFUSION	MILD	3	3.7%	3	1.4%	6	2.763	0.251
	MINIMAL	1	1.2%	8	3.7%	9		
	NO	77	95.1%	208	95.0%	285		
PLEURAL EFFUSION	MILD	17	21.0%	33	15.1%	50	1.885	0.390
	MODERATE	8	9.9%	18	8.2%	26		
	NO	56	69.1%	168	76.7%	224		
CARDIOMEGALY	NO	80	98.8%	213	97.3%	293	0.588	0.443
	YES	1	1.2%	6	2.7%	7		
Total		81	100.0%	219	100.0%	300		

Pericardial effusion was seen in 11 dengue patients out of 219 dengue patients (p value 0.251). Pleural effusion was seen in 51 patients (p value 0.390) and 6 patients were found to have cardiomegaly (p value 0.433).

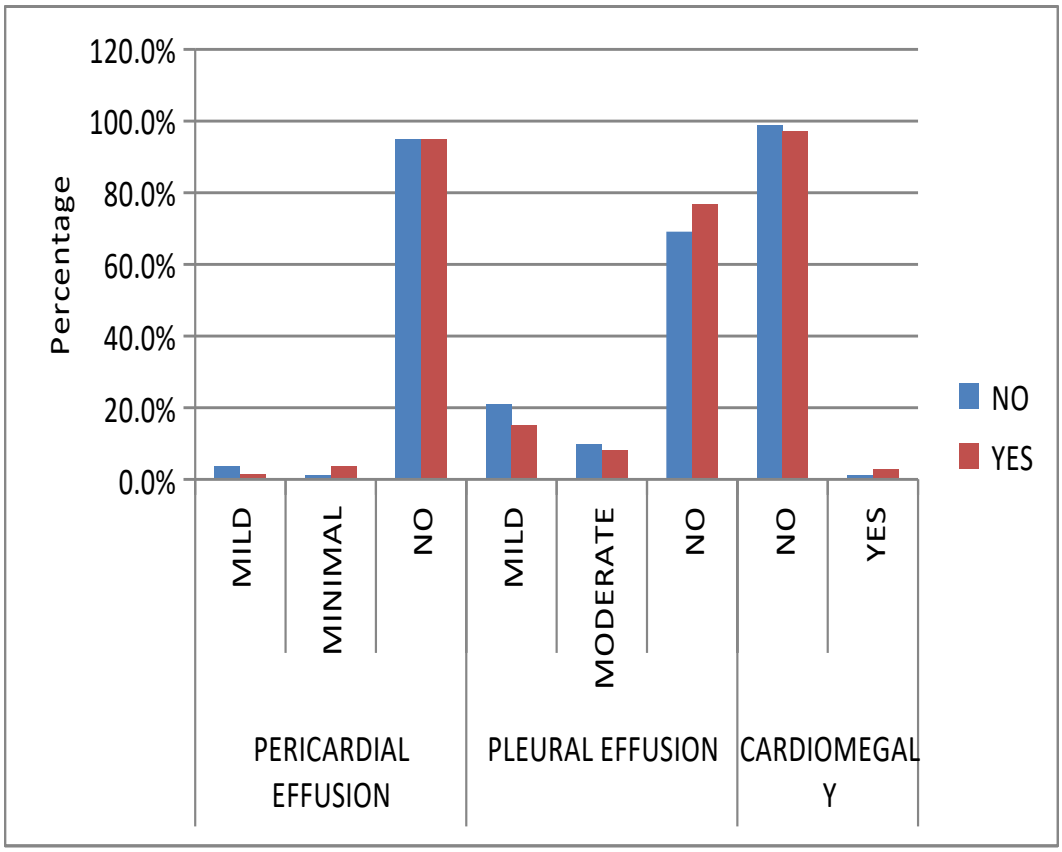

FIGURE 12: XRAY FINDINGS IN DENGUE FEVER

TABLE 13: 2D ECHO FINDINGS IN DENGUE FEVER

		DENGUE				Total	Chi-square value	p-value
		NO		YES				
RWMA	NO	81	100.00%	214	97.70%	295	1.881	0.329
	YES	0	0.00%	5	2.30%	5		
MR	MILD	1	1.20%	1	0.50%	2	0.907	0.635
	MODERATE	0	0.00%	1	0.50%	1		
	NO	80	98.80%	217	99.10%	297		
TR	MILD	3	3.70%	2	0.90%	5	2.809	0.124
	NO	78	96.30%	217	99.10%	295		
GHK	GHK LV	5	6.20%	14	6.40%	19	0.005	0.945
	NO	76	93.80%	205	93.60%	281		
Total		81	100.00%	219	100.00%	300		

Regional wall motion abnormalities was seen in 5 patients out of 219 dengue patients (2.3%). MR and TR present in 2 patients respectively. GHK was seen in 14 dengue patients (6.4%).

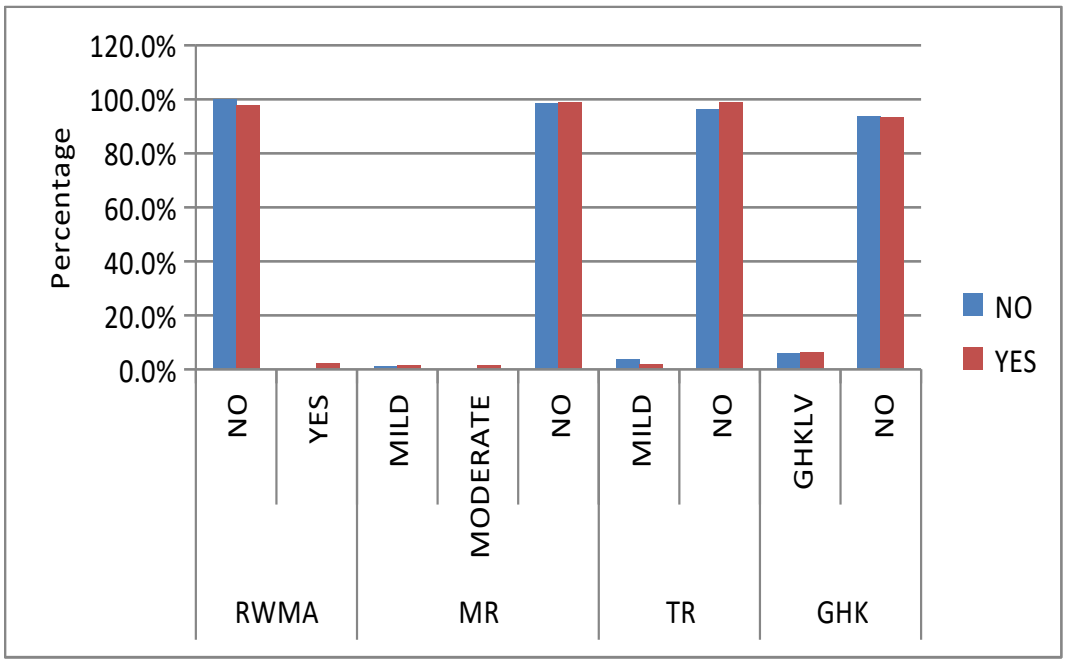

FIGURE 13: 2 D ECHO FINDINGS IN DENGUE FEVER

TABLE 14: BIOCHEMICAL FINDINGS IN DENGUE FEVER

		DENGUE				Total	Chi-square value	p-value
		NO		YES				
CPKMB	Normal	72	88.9%	208	95.0%	280	3.523	0.071
	Raised	9	11.1%	11	5.0%	20		
TROP T	Normal	45	55.6%	198	90.4%	243	46.678	0.001
	Raised	36	44.4%	21	9.6%	57		
TROPI	Normal	69	85.2%	199	90.9%	268	2.004	0.157
	Raised	12	14.8%	20	9.1%	32		
BNP	Normal	55	67.9%	180	82.2%	235	7.115	0.011
	Raised	26	32.1%	39	17.8%	65		

Raised CPKMB levels were present in 11 (5%) patients of dengue fever. 21 (9.6%) patients had raised Trop T levels and 20 (9.1%) patients had raised Trop I levels. Raised BNP levels were present in 39 patients of dengue fever (17.8%). Trop T

(p valueb0.001) and BNP levels (p value 0.011) were statistically significant in dengue fever as compared to other tropical fevers.

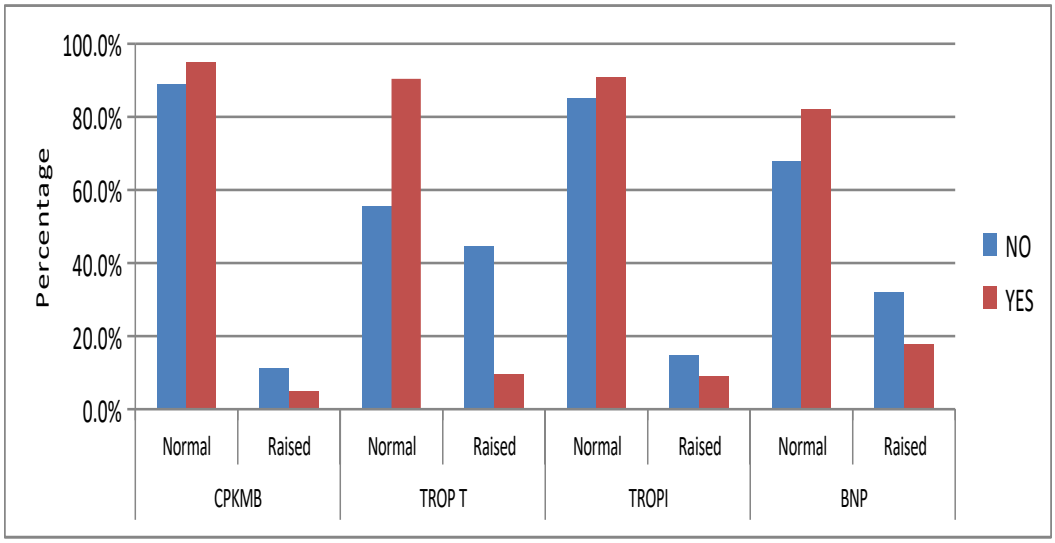

FIGURE 14: BIOCHEMICAL FINDINGS IN DENGUE FEVER

TABLE 15: PR INTERVAL AND QTc INTERVAL IN DENGUE FEVER

		DENGUE				Total	Chi-square value	p-value
		NO		YES				
PR INTERVAL ms	Short	14	17.3%	73	33.3%	87	7.029	0.03
	Normal	59	72.8%	138	63.0%	197		
	Prolonged	5	6.2%	8	3.7%	13		
QTcINTERVAL	Short	1	1.2%	5	2.3%	6	1.241	0.538
	Normal	57	70.4%	164	74.9%	221		
	Prolonged	23	28.4%	50	22.8%	73		

Short PR interval was seen in 73 (33.3%) patients out of 219 patients diagnosed with dengue fever. It was statistically significant as compared to other dengue fevers (p value 0.03). Prolong PR interval was seen in 8 patients (3.7%) in our study. Short QTc interval was observed in 5 patients (2.3%) and prolong QTc interval in 50 patients (p value 0.538).

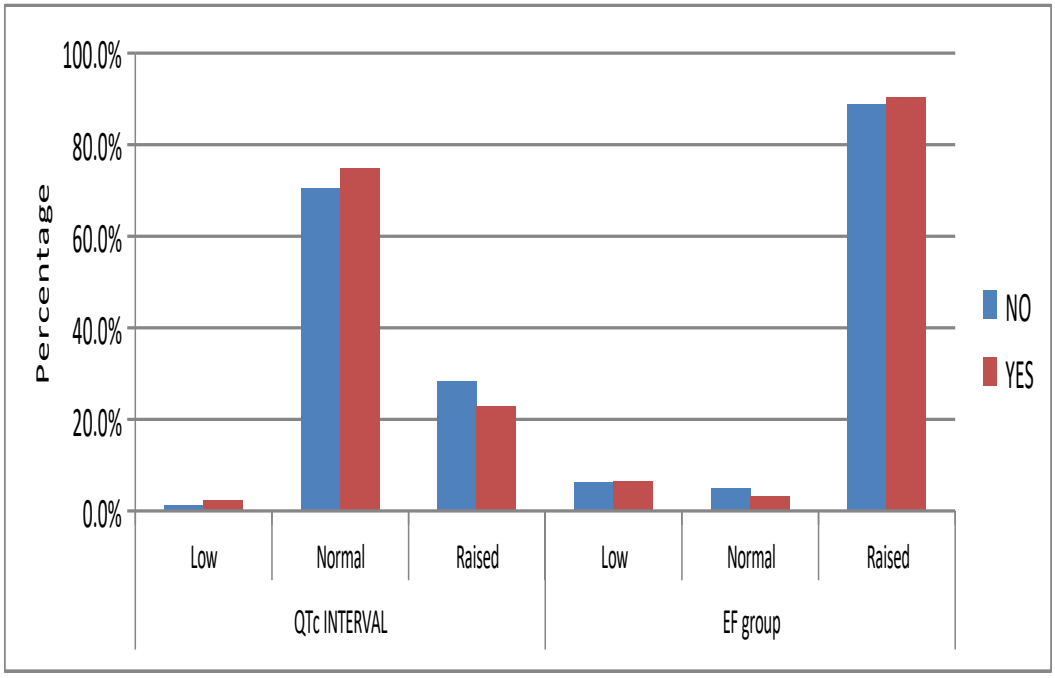

FIGURE 15: PR INTERVAL AND QTc INTERVAL CHANGES IN DENGUE FEVER

TABLE 16: RHYHTM ABNORMALITIES IN LEPTOSPIROSIS

		LEPTOSPIROSIS				Total	Chi-square value	p-value
		NO		YES				
1 DEGREE AV BLOCK	YES	4	1.5%	0	0.0%	4	0.518	0.472
VT	YES	2	0.8%	0	0.0%	2	0.257	0.612
SVT	YES	6	2.3%	2	5.9%	8	1.528	0.216
JUNCTIONAL RHYTHM	YES	8	3.0%	0	0.0%	8	1.051	0.305
SINUS ARRHYTHMIA	YES	9	3.4%	2	5.9%	11	0.533	0.465
ATRIAL FIBRILLATION	YES	4	1.5%	1	2.9%	5	0.38	0.538
PREMATURE COMPLEXES	YES	17	6.4%	1	2.9%	18	0.636	0.425
INTRAVENTRICULAR CONDUCTION DELAYS	YES	19	7.1%	2	5.9%	21	0.073	0.786
SINUS BRADYCARDIA	YES	22	8.3%	2	5.9%	24	0.234	0.629
SINUS TACHYCARDIA	YES	119	44.7%	17	50.0%	136	0.445	0.801

Sinus tachycardia (17 out of 34 leptospirosis patients) was most common finding in leptospirosis (p value 0.801) followed by sinus bradycardia (5.9%), sinus arrthymia (5.9%), SVT (5.9%) and intraventricular conduction delays (5.9%) which had similar incidence. SVT (5.9%) was found to be more common in leptospirosis patients followed by dengue pts (2.3%) and other tropical fevers.

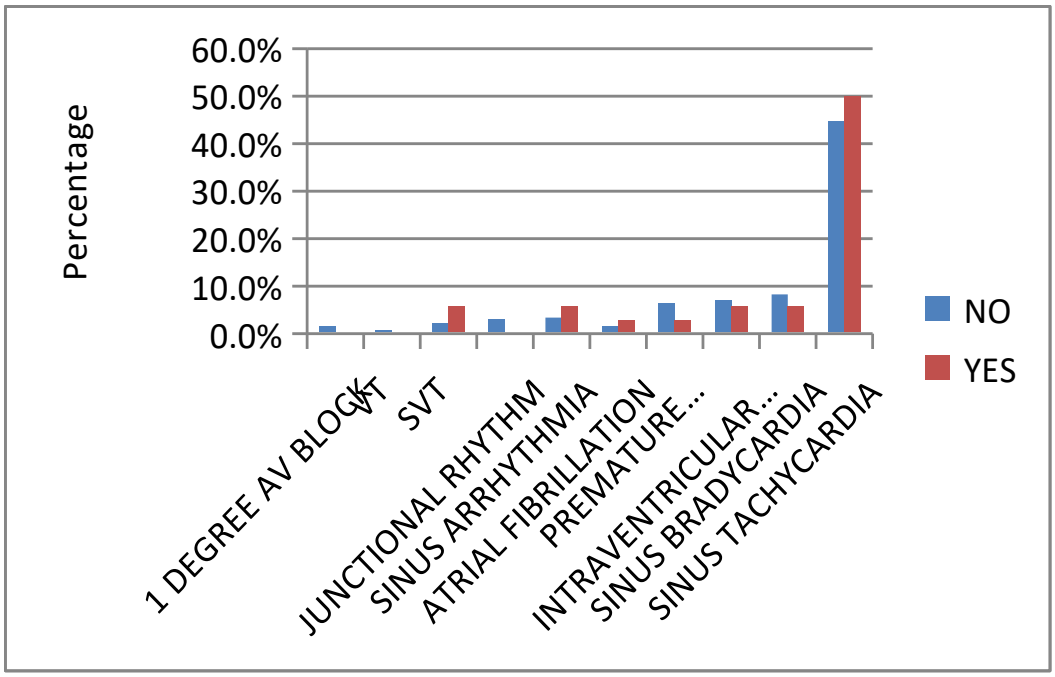

FIGURE 16: RYTHM ABNORMALITIES IN LEPTOSPIROSIS

TABLE 17: X RAY FINDINGS IN LEPTOSPIROSIS

		LEPTOSPIROSIS				Total	Chi-square value	p-value
		NO		YES				
PERICARDIAL EFFUSION	MILD	3	1.1%	3	8.8%	6	10.136	0.006
	MINIMAL	9	3.4%	0	0.0%	9		
	NO	254	95.5%	31	91.2%	285		
PLEURAL EFFUSION	MILD	44	16.5%	6	17.6%	50	1.588	0.452
	MODERATE	25	9.4%	1	2.9%	26		
	NO	197	74.1%	27	79.4%	224		
CARDIOMEGALY	NO	260	97.7%	33	97.1%	293	0.062	0.803
	YES	6	2.3%	1	2.9%	7		
Total		266	100.0%	34	100.0%	300		

Pericardial effusion was present in 8.8% (p value of 0.06) leptospirosis patients (3 out of 34) which was found to be significant as compared to other tropical fevers.

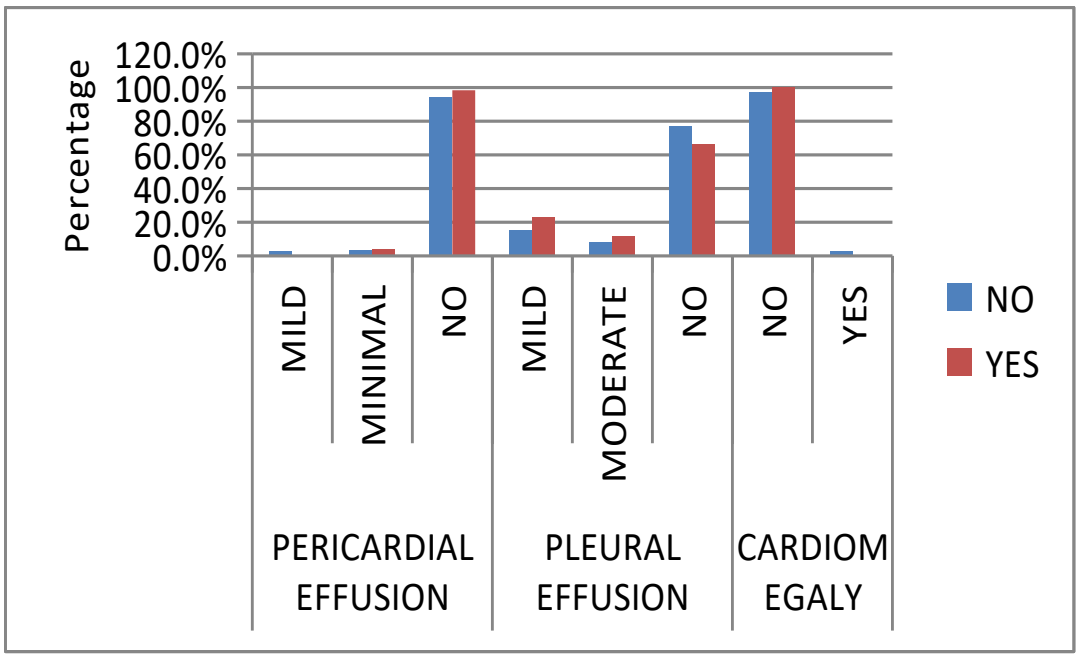

FIGURE 17: X RAY FINDINGS IN LEPTOSPIROSIS

TABLE 18: 2 D ECHO FINDINGS IN LEPTOSPIROSIS

		LEPTOSPIROSIS				Total	Chi-square value	p-value
		NO		YES				
RWMA	NO	261	98.1%	34	100.0%	295	0.65	0.420
	YES	5	1.9%	0	0.0%	5		
MR	MILD	2	0.8%	1	2.9%	3	1.46	0.227
	NO	264	99.2%	33	97.1%	297		
TR	MILD	4	1.5%	1	2.9%	5	0.38	0.538
	NO	262	98.5%	33	97.1%	295		

In this study mild MR was found in 2.9% of leptospirosis diagnosed patients (1 out of 34 total patients). Mild TR was seen in 2.9% of leptospirosis patients (1 out of 34). RWMA were not seen in leptospirosis patients. 2 D echo findings were found to be insignificant in leptospirosis patients.

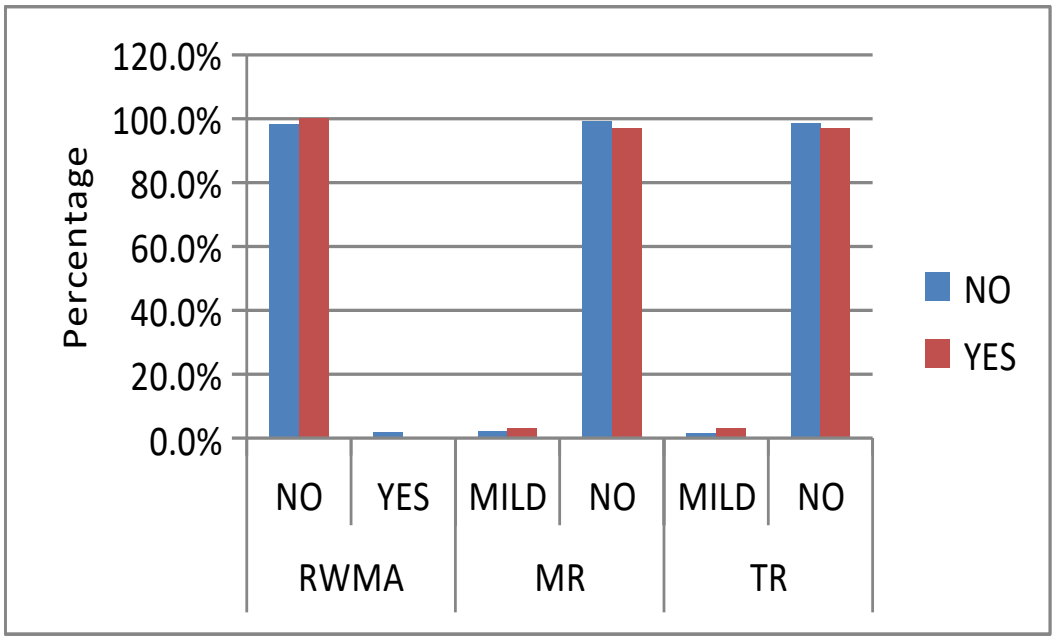

FIGURE 18: XRAY FINDINGS IN LEPTOSPIROSIS

TABLE 19: GHK FINDINGS IN LEPTOSPIROSIS

		LEPTOSPIROSIS				Total	Chi-square value	p-value
		NO		YES				
GHK	GHK LV	17	6.4%	2	5.9%	19	0.013	0.909
	NO	249	93.6%	32	94.1%	281		
Total		266	100.0%	34	100.0%	300		

IN this study GHK was seen in 2 patients of leptospirosis out of 34 patients (5.9%) It was statistically found to be insiginificant.

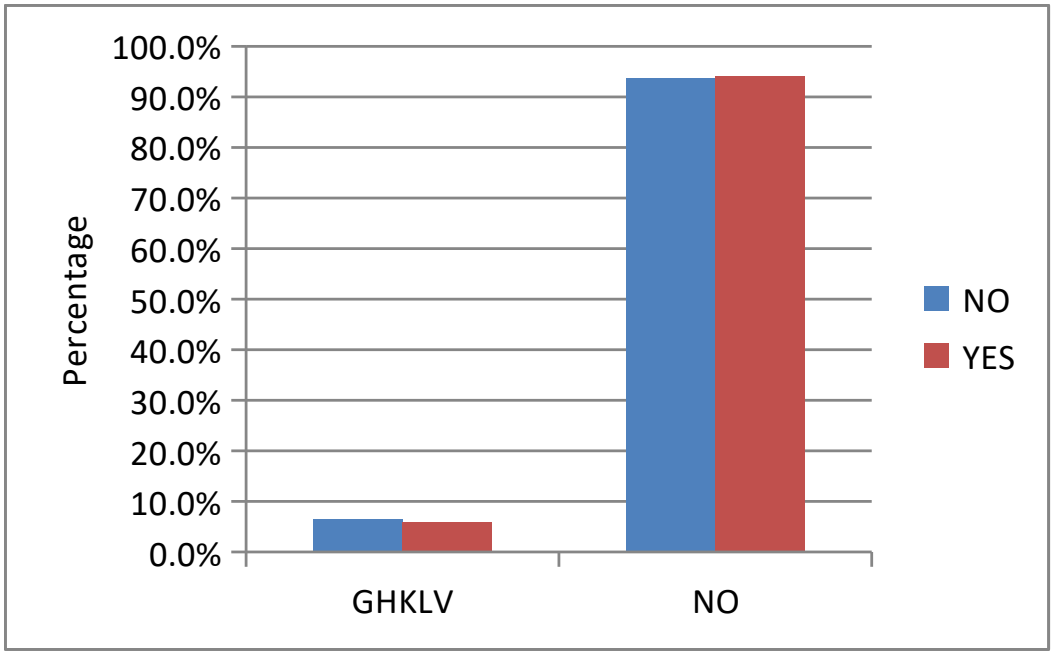

FIGURE 19: GHK FINDINGS IN LEPTOSPIROSIS

TABLE 20: BIOCHEMICAL FINDINGS IN LEPTOSPIROSIS

		LEPTOSPIROSIS				Total	Chi-square value	p-value
		NO		YES				
CPKMB	Normal	249	93.6%	31	91.2%	280	0.287	0.592
	Raised	17	6.4%	3	8.8%	20		
TROPT	Normal	216	81.2%	27	79.4%	243	0.063	0.802
	Raised	50	18.8%	7	20.6%	57		
TROPI	Normal	238	89.5%	30	88.2%	268	0.049	0.826
	Raised	28	10.5%	4	11.8%	32		
BNP	Normal	207	77.8%	28	82.4%	235	0.365	0.546
	Raised	59	22.2%	6	17.6%	65		

Raised CPKMB levels were seen in 3 patients out of total 34 leptospirosis patients (8.8%). Raised Trop T was found in 7 patients (20.6%). Trop I levels came positive in 4 patients out of 34 total patients (11.8%). BNP levels were raised in 6 patients of leptospirosis (17.6%).

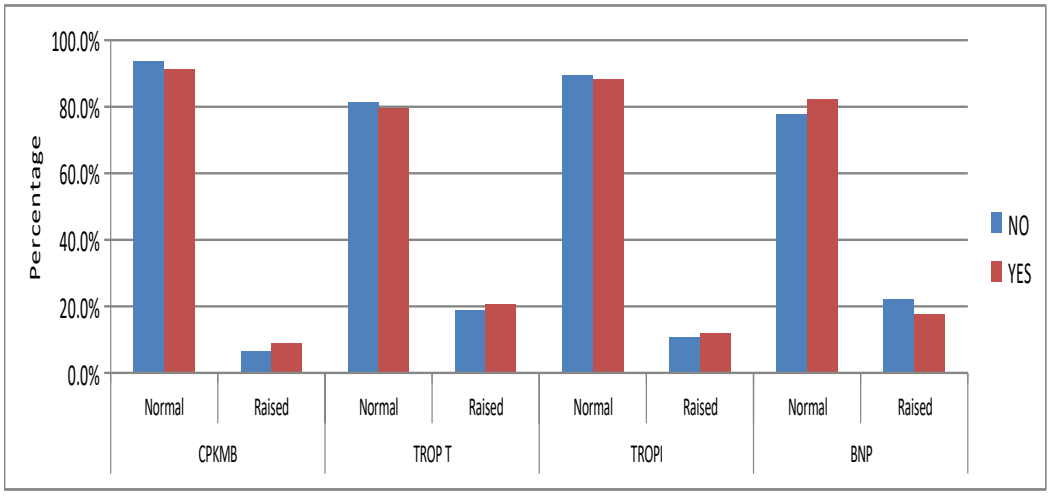

FIGURE 20: BIOCHEMICAL FINDINGS IN LEPTOSPIROSIS

TABLE 21: PR INTERVAL AND QTc INTERVAL CHANGES IN LEPTOSPIROSIS

		LEPTOSPIROSIS				Total	Chi-square value	p-value
		NO		YES				
PR INTERVAL ms	Short	76	28.6%	11	32.4%	87	1.833	0.410
	Normal	175	65.8%	22	64.7%	197		
	Prolonged	13	4.9%	0	0.0%	13		
QTc INTERVAL CHANGES	Short	6	2.3%	0	0.0%	6	4.55	0.103
	Normal	200	75.2%	21	61.8%	221		
	Prolonged	60	22.6%	13	38.2%	73		

In our study short PR interval was seen in 11 patients (32.4%) out of 34 leptospirosis patients. Prolonged QTc interval was seen 13 patients (38.2%) out of 34 patients.

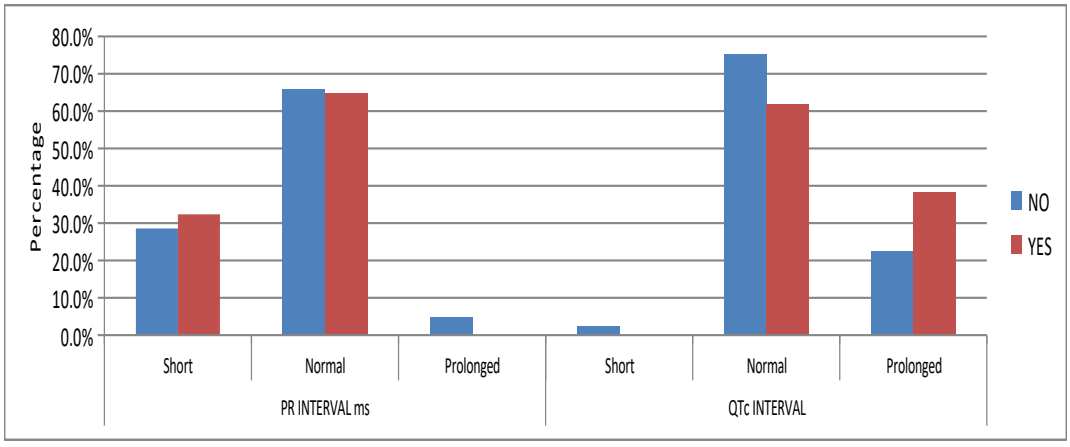

FIGURE 21: PR INTERVAL AND QTc INTERVAL CHANGES IN LEPTOSPIROSIS

TABLE 22: RHYTHM ABNORMALITIES IN SCRUB TYPHUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
1 DEGREE AV BLOCK	YES	3	1.3%	1	1.6%	4	0.046	0.829
VT	YES	2	0.8%	0	0.0%	2	0.525	0.469
SVT	YES	7	2.9%	1	1.6%	8	0.334	0.563
JUNCTIONAL RHYTHM	YES	5	2.1%	3	4.8%	8	1.421	0.233
SINUS ARRHYTHMIA	YES	10	4.2%	1	1.6%	11	0.933	0.334
ATRIAL FIBRILLATION	YES	2	0.8%	3	4.8%	5	4.798	0.062
PREMATURE COMPLEXES	YES	15	6.3%	3	4.8%	18	0.187	0.666
INTRAVENTRICULAR CONDUCTION DELAYS	YES	18	7.6%	3	4.8%	21	0.561	0.454
SINUS BRADYC	YES	23	9.7%	1	1.6%	24	4.332	0.037

ARDIA								
SINUS TACHYCARDIA	YES	100	42.0%	36	58.1%	136	9.456	0.009

In our study rhythm abnormalities were studied in scrub typhus. Total 62 cases were studied. Sinus tachycardia was most common finding in scrub typhus. 36 patients had sinus tachycardia (58.1%). It was significant finding (p 0.009) as compared to other tropical fever and was more significant then dengue fever

(p value 0.011). Sinus bradycardia was seen in 1 patient out of 62 patients which was significant as compared to other tropical fevers (p value 0.037).

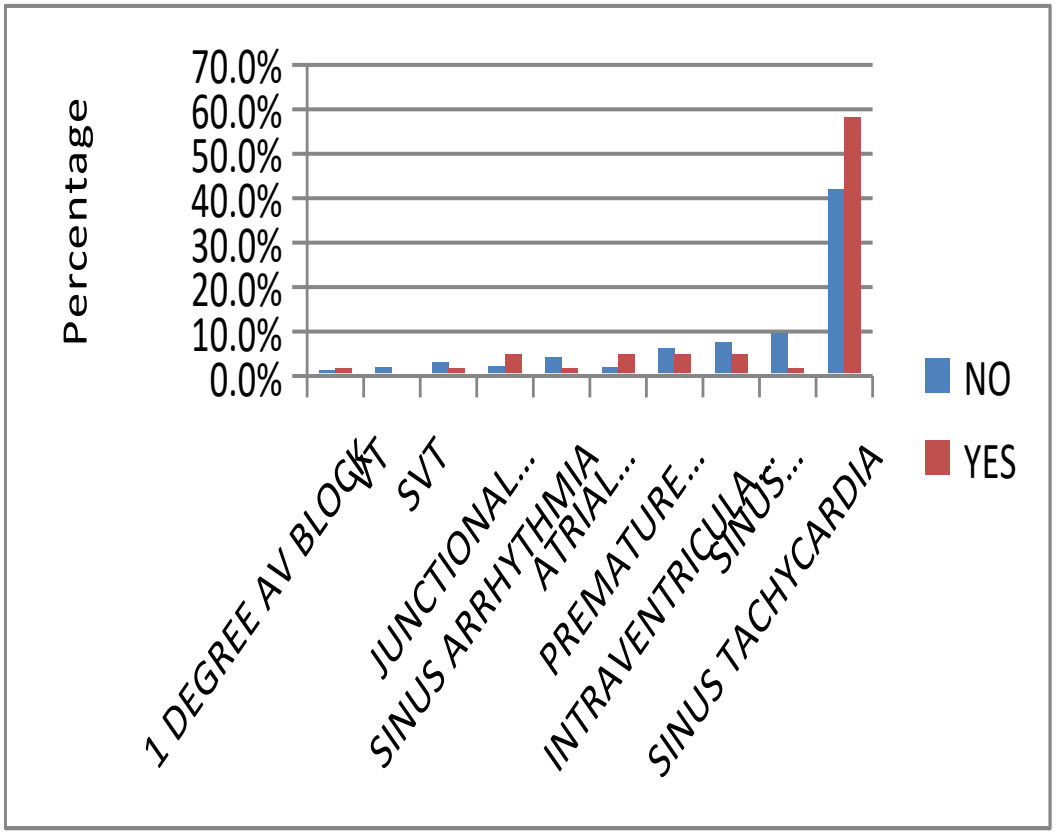

FIGURE 22: RHYTHM ABNORMALITIES IN SCRUB TYPHUS

TABLE 23: ST CHANGES IN SCRUB TYPHUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
T WAVE INVERSION	NO	238	100.0%	60	96.8%	298	7.729	0.005
	YES	0	0.0%	2	3.2%	2		
NSTEMI	NO	237	99.6%	62	100.0%	299	0.261	0.609
	YES	1	0.4%	0	0.0%	1		
STEMI	NO	230	96.6%	61	98.4%	291	0.517	0.472
	YES	8	3.4%	1	1.6%	9		

In our study T wave inversion was seen in 3.2 % of scrub typhus (2 out of 62) patients which was significant as compared to other tropical fever (p value 0.005). STEMI was found in 1.6% of cases (1 out of 62).

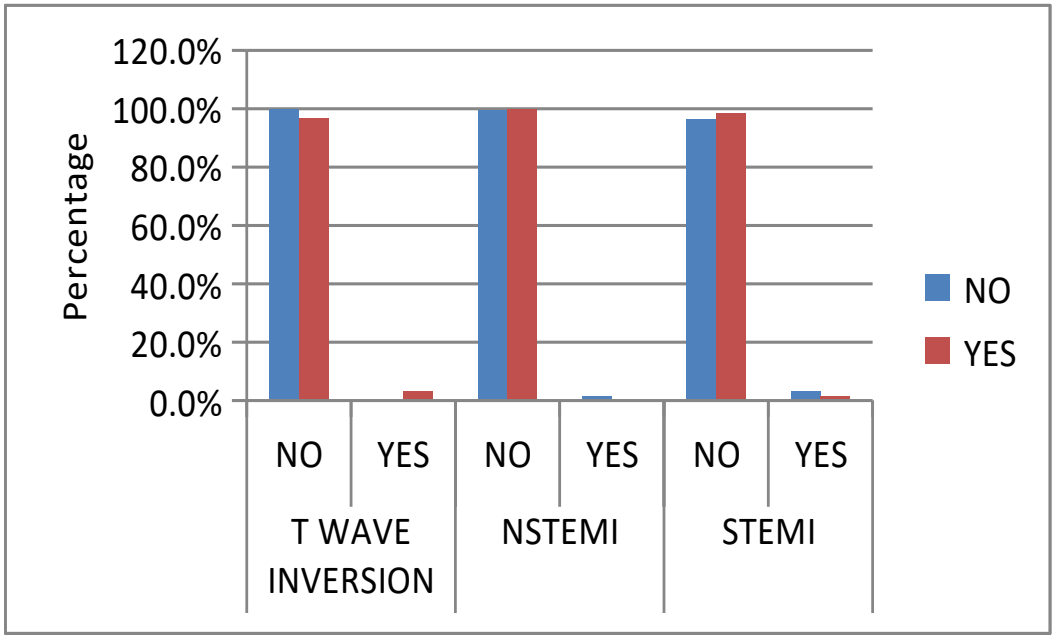

FIGURE 23: ST CHANGES IN SCRUB TYPHUS

TABLE 24: XRAY FINDINGS IN SCRUB TYPHUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
PERICARDIAL EFFUSION	MILD	6	2.5%	0	0.0%	6	2.159	0.340
	MINIMAL	8	3.4%	1	1.6%	9		
	NO	224	94.1%	61	98.4%	285		
PLEURAL EFFUSION	MILD	36	15.1%	14	22.6%	50	3.024	0.221
	MODERATE	19	8.0%	7	11.3%	26		
	NO	183	76.9%	41	66.1%	224		
CARDIOMEGALY	NO	231	97.1%	62	100.0 %	293	1.867	0.172
	YES	7	2.9%	0	0.0%	7		
Total		238	100.0 %	62	100.0 %	300		

Minimal pericardial effusion was seen 1.6% of patients diagnosed with scrub typhus. Mild pleural effusion was found in 22.6% of patients (14 out of 62). 11.1 % of patients had moderate pleural effusion (7 out of 62).

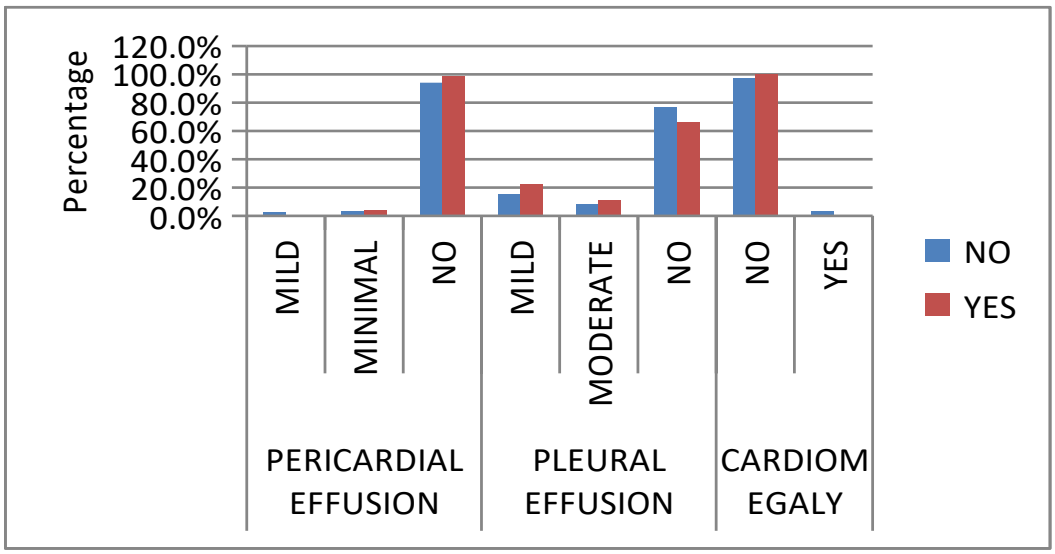

FIGURE 24: XRAY FINDINGS IN SCRUB TYPHUS

TABLE 25: GHK FINDINGS IN SCRUB TYHPUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
GHK LV	NO	222	93.3%	59	95.2%	281	0.294	0.587
	YES	16	6.7%	3	4.8%	19		
Total		238	100.0%	62	100.0%	300		

In our study GHK was found 4.8 % of scrub typhus patients (3 out of 62).

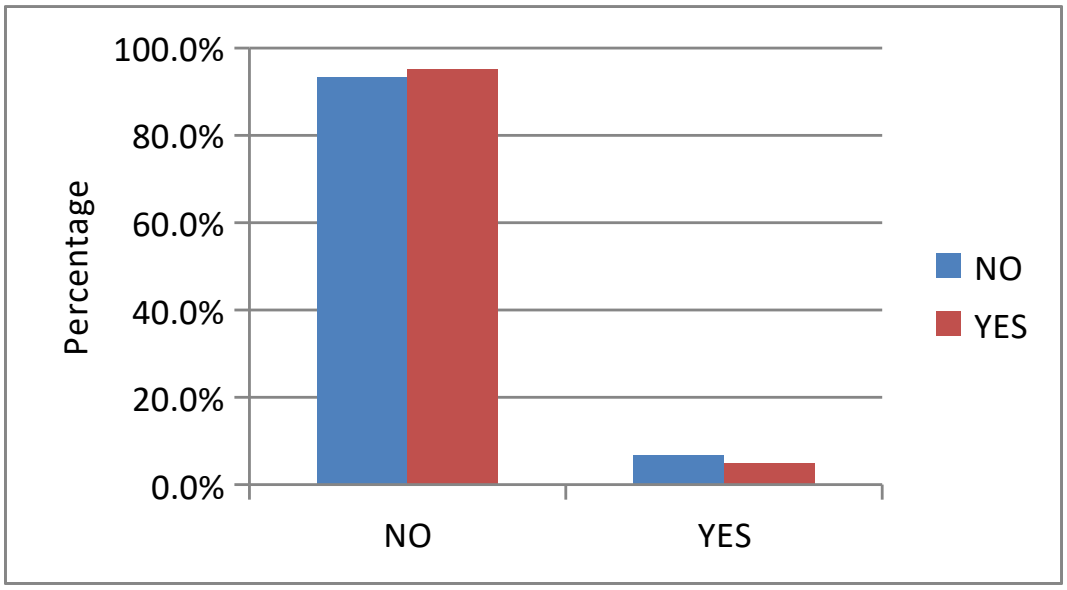

FIGURE 25: GHK FINDINGS IN SCRUB TYPHUS

TABLE 26: 2 D ECHO FINDINGS IN SCRUB TYPHUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
RWMA	NO	233	97.9%	62	100.0%	295	1.325	0.250
	YES	5	2.1%	0	0.0%	5		
MR	MILD	2	0.8%	1	1.6%	3	0.297	0.586
	NO	236	99.2%	61	98.4%	297		
TR	MILD	2	0.8%	3	4.8%	5	4.798	0.062
	NO	236	99.2%	59	95.2%	295		

In this study mild MR was found in 1.6% of scrub typhus patients (1 out of 62). Mild TR was seen in 4.8% of patients (3 out of 62). RWMA was not found in scrub typhus patients.

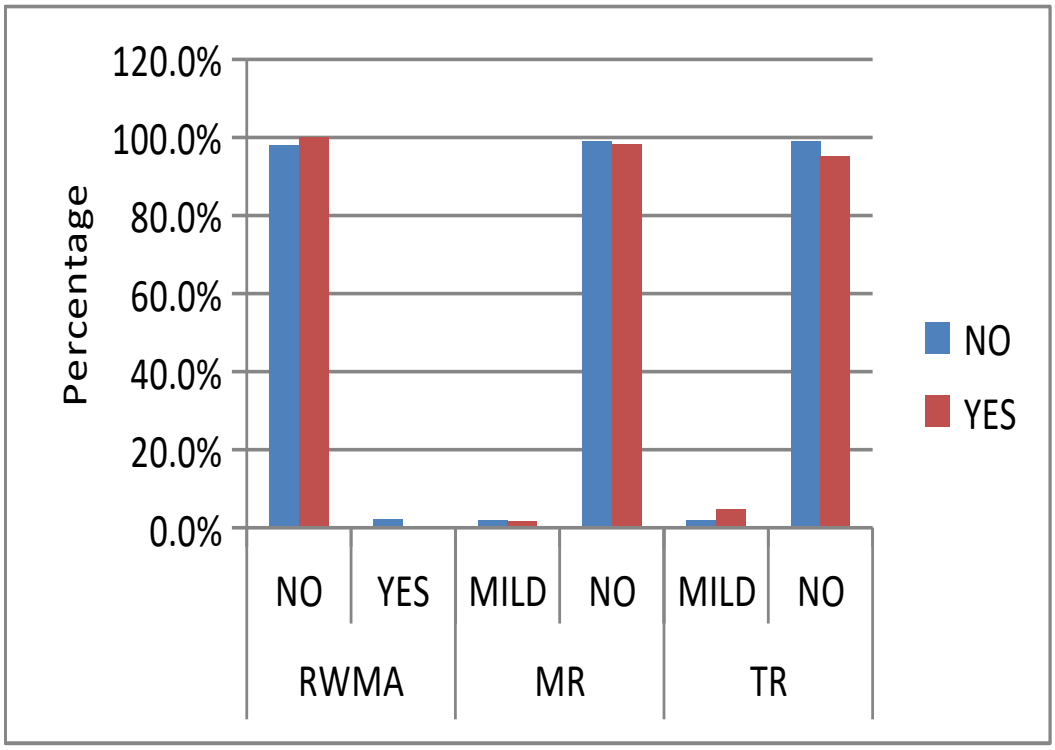

FIGURE 26: 2 D ECHO FINDINGSIN SCRUB TYPHUS

TABLE 27: BIOCHEMICAL FINDINGS IN SCRUB TYPHUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
CPKMB	Normal	225	94.5%	55	88.7%	280	2.685	0.101
	Raised	13	5.5%	7	11.3%	20		
TROPT	Normal	217	91.2%	26	41.9%	243	77.493	0.001
	Raised	21	8.8%	36	58.1%	57		
TROPI	Normal	215	90.3%	53	85.5%	268	1.215	0.257
	Raised	23	9.7%	9	14.5%	32		
BNP	Normal	196	82.4%	39	62.9%	235	10.963	0.002
	Raised	42	17.6%	23	37.1%	65		

In this study CPKMB was elevated in 7 patients of scrub typhus (11.3%). Trop T levels were raised in 36 patients (58.1%) out of 62 patients of scrub typhus. It was found to be significant finding as compared to other tropical fever (p value 0.001). Trop I levels were elevated in 14.5% of patients (9 out of 62 patients) and BNP levels were raised in 37.1% of patients (23 out of 62 patients) which was significant (p value 0.002) as compared to other tropical fevers.

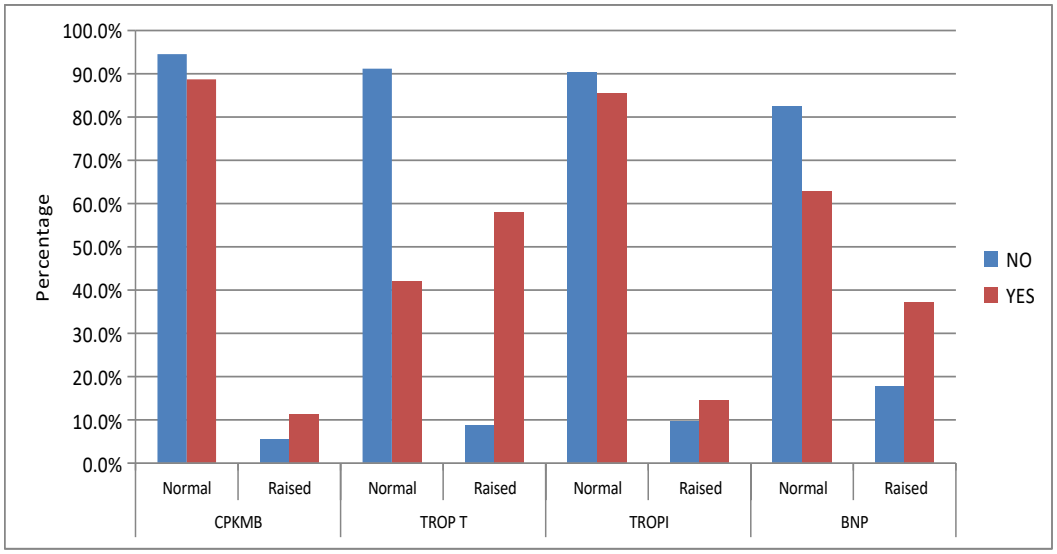

FIGURE 27: BIOCHEMICAL FINDINGS IN SCRUB TYPHUS

TABLE 28: PR INTERVAL AND QTc INTERVAL CHANGES IN SCRUB TYPHUS

		SCRUB TYPHUS				Total	Chi-square value	p-value
		NO		YES				
PR INTERVAL ms	Short	78	32.8%	9	14.5%	87	8.875	0.012
	Normal	152	63.9%	45	72.6%	197		
	Prolonged	8	3.4%	5	8.1%	13		
QTc INTERVAL	Short	5	2.1%	1	1.6%	6	0.206	0.902
	Normal	174	73.1%	47	75.8%	221		
	Prolonged	59	24.8%	14	22.6%	73		

In this study 9 patients out of 62 patients had short PR interval (14.6%) which was found to be statistically significant as compared to other tropical fever. (p value 0.012). 8.1% of patients had prolonged PR interval (5 out of 62 patients). Short QTc interval was seen in 1 patient (1.6%) and plrolonged QTc interval was found in 22.6 % (14 out 62 patients).

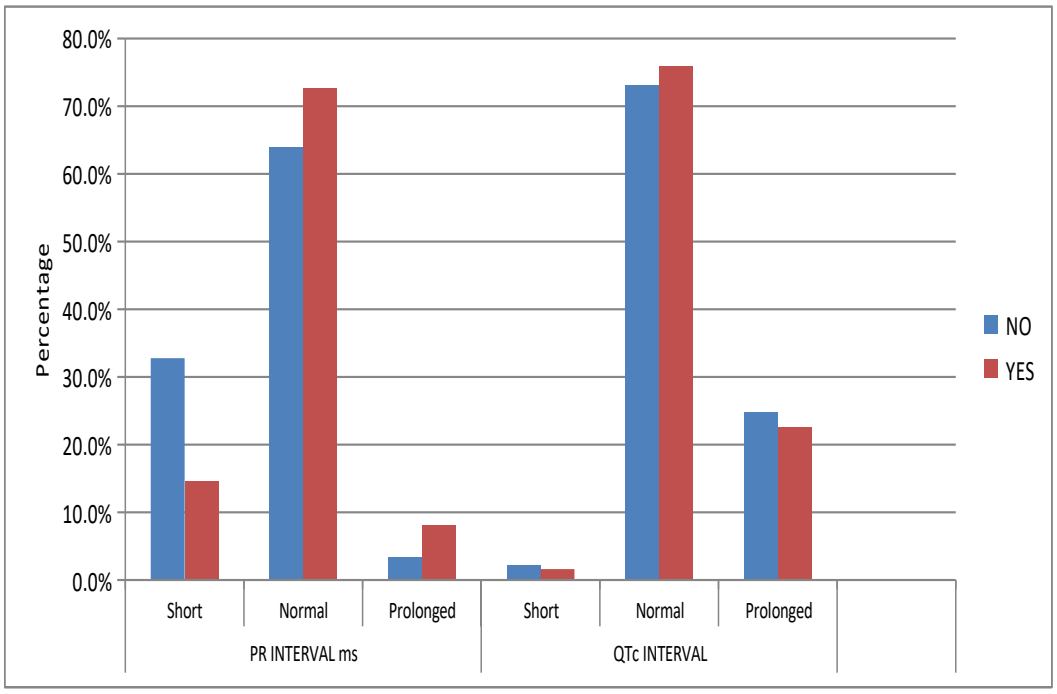

FIGURE 28: PR INTERVAL AND QTc INTERVAL CHANGES IN SCRUB TYPHUS

TABLE 29: RHYTHM ABNORMALITIES IN MALARIA

		MALARIA				Total	Chi-square value	p-value
		NO		YES				
PREMATURE COMPLEXES	YES	17	5.7%	1	33.3%	18	4.014	0.170
SINUS TACHYCARDIA	YES	134	45.1%	2	66.7%	136	0.56	0.756
Total		297	100.0%	3	100.0%	300		

In our study 3 cases of malaria were taken out of which 2 were of sinus tachycardia and 1 case showed premature atrial complexes.

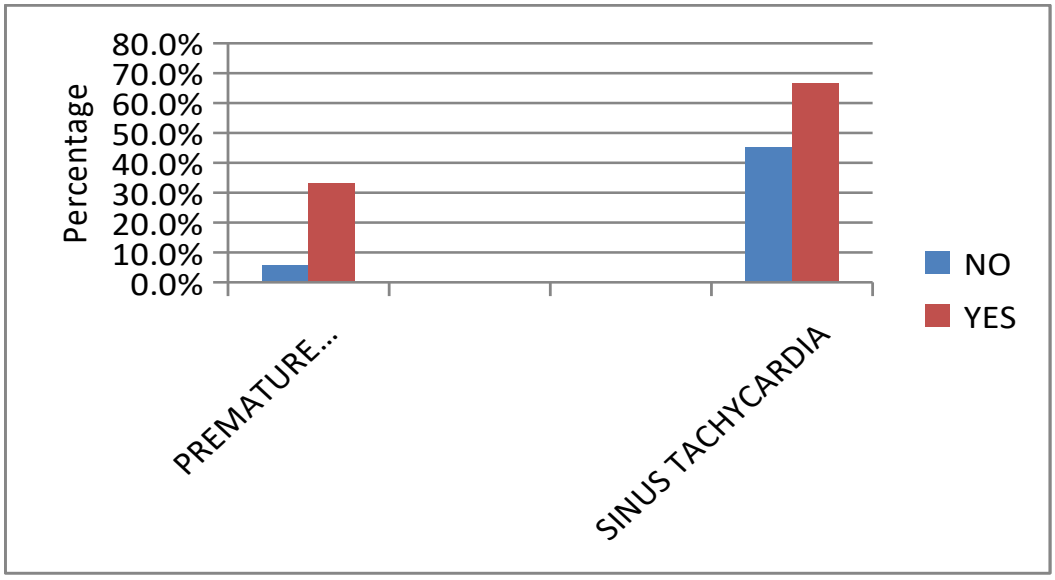

FIGURE 29: RHYTHM ABNORMALITIES IN MALARIA

DISCUSSION

This study was conducted in a tertiary care hospital of north India. It was a prospective observational study involving 300 patients of tropical fever which included dengue, leptospirosis, scrub typhus and malaria. The statistical data obtained at the end of the study was compared with previously published literatures.

In our study tropical fever has been seen over 18 years of age groups in population of 300 patients. The mean age of presentation in our study was 43.75 ± 16.36 years with a male-to-female ratio of 1.4 indicating male preponderance.

DENGUE FEVER

Cardiac manifestations of Dengue fever includes tachycardia, bradycardia, transient AV blocks, ventricular arrhythmias, myocarditis and pericardial effusion. Patients in complicated dengue fever can present with mildly raised cardiac enzyme to severe myocarditis leading to congestive heart failure, arrhythmias, cardiogenic shock, and death.[59] In our study of cardiac manifestations in dengue fever sinus tachycardia was found to be most common presentation. It was present in 41.1% of dengue patients with a significant p value of 0.01. Intraventricular conduction delay was seen in 8.2% (18 out of 219), 9.6% (21 out of 219) had sinus bradycardia, 0.9% had atrial fibrillation (2 out of 219).

Abdul et al in 2022 studied 42 patients of dengue fever and most common cardiac finding in these patients was sinus tachycardia. In this study 31% of dengue myocarditis patients had sinus tachycardia on presentation (13 out of 42), only 3 patients had sinus bradycardia, 14% (6 out of 42) had atrial fibrillation, 26% (11 out of 42) had intraventricular conduction delay.[60]

Similar results were observed in a study by Gupta et al on cardiac involvement in dengue haemorrhagic fever.[61] Sinus bradycardia was seen to be present in 14.28%, sinus tachycardia in 21.4%, AV dissociation with SA node dysfunction in 1 patient which resolved in 24 hours.

2D echocardiography findings such as RWMA, GHK, pericardial effusion are suggestive of cardiac involvement in complicated dengue fever. In our study of 219 dengue patients, global hypokinesia was seen in 6.4% (14 out of 219), regional wall motion abnormalities in 2.3% (5 out of 219), pericardial effusion in 5.1% (11 out of 219), and pleural effusion in 23.3% (51 out of 219).

Satarsinghe et al. in 2007 found that 24% of patients of dengue fever had echocardiographic abnormal findings which were in accordance with our study.[62] Lakshman et al studied the prevalence of cardiac involvement among 50 admitted dengue patients and reported evidence of myocardial involvement in 16% and 30% of patients based on 2D- echo and biomarker testing, respectively.[63]

In our study group of 219 dengue patients, it was found that 208 patients (95%) of dengue fever had normal CPK-MB levels and 11 patients had raised values (5%). Raised troponin T levels were seen in 9.6% (21 out of 219) of patients, troponin I in 9.1% (20 out of 219) and BNP in 17.8% (39 out of 219) patients. Similar results were seen in a study conducted by Wichmann et alwhich showed 25% of patients with dengue had elevated levels of one or more cardiac biomarkers, such as myoglobin, CK-MB, troponin-T levels.[64] Short PR interval was seen in 73 (33.3%) patients out of 219 patients diagnosed with dengue fever. It was statistically significant as compared to other tropical fevers with significant p value of 0.03. No such significant finding was observed in previous studies. It was an incidental finding in our study and could be because of underlying acute respiratory distress, conduction abnormalities, drug toxicity or endocrinological disorders.

Prolonged PR interval on ECG was seen in 8 patients (3.7%) in our study of dengue fever. In a study by Shah et al in 2021, 320 patients were studied and 1.9% had prolonged PR interval.[65] Papalkar et al in 2019 conducted a study on 60 patients and it was found that PR prolongation was present in 1.67% of patients.[66] Arora and Patel et all in 2016 studied

120 hospitalized patients and prolonged PR interval was seen in 3.3% of patients.[67]

Prolonged QTc interval was seen in 50 patients of dengue fever in our study (p value 0.538). In a study on Abnormalities in electrocardiographic ventricular repolarization in patients with dengue virus infection by Rosemary Aparecida Furlan-Daniel et al In 2019 showed that patients with DENV are found to have lengthening of the QTc interval, but not of the QT interval dispersion. Furthermore, about 5% of such patients showed increased QTc interval. Increased QT interval has previously been observed in a patient with Takatsubo cardiomyopathy secondary to DENV.[68] In our study QTc prolongation was seen in 22.8% of patients of dengue fever probably due to underlying dyselectrolytemia, arrythmias, genetic polymorphism , drugs or renal dysfunction.

In our study of 219 patients, ST-T changes on ECG were found in 4.2% of patients of dengue fever. Arora and Patel et all in 2016 studied 120 hospitalised dengue patients, ECG changes were seen in 20 % of patients with ST-T changes in 3.3% of patients which were parallel to our study.[67]

Poornima et al in 2019 studied 341 patients and found 4.1% of patients having T wave inversion and 2.3% of patients having ST depression which were similar to the findings observed in our study.[69]

LEPTOSPIROSIS

Total 34 patients of leptospirosis with cardiac manifestations were enrolled in our study. Sinus tachycardia (17 out of 34 leptospirosis patients) was found to be the most common finding in leptospirosis with p value of 0.801. Comparable results were observed in a study conducted by Prasanth Sankaret al in 2011 which included 100 patients of leptospirosis, malaria and dengue. Sinus tachycardia was most common in Leptospirosis (18 patients out of 35), and sinus bradycardia was seen in 12% of patients.[70] In our study sinus bradycardia (5.9%), sinus arrthymia (5.9%), supraventricular tachycardia (5.9%) and intraventricular conduction delays (5.9%) with premature complexes in 2.9% of patients

were observed. Atrial fibrillation was seen in 1 patient out of 34 patients in our study.

A prospective study by Mathew et al, including 105 patients of leptospirosis, demonstrated acute ECG variabilities like sinus tachycardia in 34.2% of the patients, sinus bradycardia in 16.2%, atrial fibrillation in 6.31%, left bundle branch block in 4.76%, incomplete right bundle branch block in 4.76%, atrial and ventricular ectopic beats in 2.83% which were similar to our study.[71] Supraventricular tachycardia(5.9%) was found to be more common in leptospirosis patients than dengue patients (2.3%) and other tropical fevers in our study. In this study prolonged QTc interval was seen in 13 patients (38.2%) out of 34 patients which was more as compared to dengue fever. Thus it is probably a predisposing factor for more arrhythmia in leptospirosis.

Raised CPKMB levels were seen in 3 patients out of total 34 leptospirosis patients (8.8%). Raised Trop T was found in 7 patients (20.6%). Troponin I levels came positive in 4 patients out of 34 total leptospirosis patients (11.8%). BNP levels were raised in 6 patients of leptospirosis (17.6%). These findings were identical to findings in a study conducted by Sunisha et al on leptospirosis which included clinical and echocardiographic parameters. Out of 138 patients, 121 (87.68 %) patients with negative cardiac biomarkers had a normal echo. 5 patients with positive biomarkers also had a normal echo and 11.59 % had elevated cardiac enzymes.[72]

In our study regional wall motion abnormalities were not seen in leptospirosis patients. 2 D echo findings such as GHK was found to be insignificant in leptospirosis patients. 2 out of 34 patients were found to have GHK on echocardiography. Pericardial effusion was present in 8.8% (p value of 0.06) of leptospirosis patients (3 out of 34) which was found to be significant as compared to other tropical fevers. In a study on evaluation of cardiovascular status in severe leptospirosis by SV Trivedi 25 patients were enrolled. 1 of the patients had echo suggestive of myocarditis with normal ECG. 14 (10.14 %) patients with ECG suspicious

of myocarditis had normal echo. Whereas 11 (7.9 %) patients which had ECG and echo suggestive of myocarditis had normal left ventricular function.[73] Five patients had minimal pericardial effusion with mild pericardial thickening. Thus findings were in concordance to our study.

SCRUB TYPHUS

In our study cardiac findings were analyzed in scrub typhus. Total 62 cases of scrub typhus were studied. Sinus tachycardia was most common finding in patients of scrub typhus. 36 patients had sinus tachycardia (58.1%). It was significant finding with p value of 0.009 as compared to other tropical fever. It was more significant finding than dengue fever which had p value of 0.011.Similar observations were seen in a study conducted from India on 81 patients of scrub typhus by Karthik et al which also demonstrated sinus tachycardia as the most common abnormality in scrub typhus patients (46.9%).[74]

Sinus bradycardia was seen in 1 patient out of 62 patients in our study which was significant as compared to other tropical fevers with p value of 0.037. 4.8% of patients in our study had intraventricular conduction delay. T wave inversion was seen in 3.2 % of scrub typhus (2 out of 62) patients which was significant as compared to other tropical fever (p value 0.005). STEMI was found in 1.6% of cases (1 out of 62). Trop T levels were raised in 36 patients (58.1%) out of 62 patients of scrub typhus. It was found to be significant finding as compared to other tropical fever (p value 0.001). Troponin I levels were elevated in 14.5% of patients (9 out of 62 patients). CPKMB was elevated in 7 patients of scrub typhus (11.3%). BNP levels were raised in 37.1% of patients (23 out of 62 patients) which was significant (p value 0.002) as compared to other tropical fevers. Minimal pericardial effusion was seen 1.6% of patients diagnosed with scrub typhus. Mild pleural effusion was found in 22.6% of patients (14 out of 62). 11.1 % of patients had moderate pleural effusion (7 out of 62).

Similarly, a study from Thailand included 146 scrub typhus-positive patients and found new-onset ECG changes in 54.1% of the cases. 3.8% of right bundle branch block and 3.8% of ST-T changes were observed. Further, 1.3% of cases had left anterior fascicular block, premature ventricular complex, first degree A-V, and complete heart block.[75]

In our study global hypokinesia was found 4.8 % of scrub typhus patients (3 out of 62). Tsay et al have described the serious complication of scrub typhus in 33 patients and only 1 patient (3%) developed myocarditis which was in comparison to our study.[76] Cardiac complications are uncommon in scrub typhus and few have been reported till now.

In our study 9 patients out of 62 patients had short PR interval (14.6%) which was found to be statistically more significant then dengue fever. p value 0.012). This could be an aberrancy which may be idiopathic in nature or due to underlying comorbidities like heart failure or metabolic disorders.8.1% of patients had prolonged PR interval (5 out of 62 patients).

Prolonged QTc interval was found in 22.6 % in our study (14 out 62 patients).In a study by See Won et al on Scrub typhus and abnormal electrocardiography in 2012, QT prolongation was observed in 19.4%, AF in 9.1%, atrial premature beat in 3%, RBBB in 3%, ventricular premature beat in 0.6%, LBBB in 0.6% and ST elevation in 0.6% which were similar to findings in our study.[77]

MALARIA

In our hospital total 5 cases of serology proven malaria cases were admitted out of which 3 had cardiac manifestations. Thus in our study 3 cases of malaria were taken out of which 2 were of sinus tachycardia and 1 case showed premature atrial complexes on ECG. Based on limited data, the cardiovascular effects of severe malaria appear to be heterogeneous and vary depending on age. Further detailed studies are required to explore and understand the overall hemodynamic effects of this high burden disease.[78] Myocardial dysfunction in severe falciparum

malaria was present in two adults by Kumar et al from Hyderabad in India.[79] Günther et al included 161 patients with falciparum malaria in a study, troponin-T was elevated in one case (0.6%), no CK-MB elevations were found, myoglobin was elevated in 10 out of the 161 patients (6.2%), and ECG abnormalities were seen in 23 patient.[80]

A study published in 2011 by Herr et al10 patients had impaired myocardial function in falciparum malaria. Cardiac output was significantly reduced in malaria patients compared to healthy controls.[81]

7 patients out of 300 patients of tropical fever in our study had mortality.

Factors affecting survival of the patients included older age, previous comorbidities, delayed presentation and multiple organ involvement.

SUMMARY AND CONCLUSION

- Cases included in our study were dengue (219), leptospirosis (34), scrub typhus (62) and malaria (3).
- Maximum number of patients were in age group of 31 to 50 yrs age group. 59.7% of patients were males and 40.3% of patients were females.
- Sinus tachycardia was most common presentation in dengue fever and it was a significant (p value 0.011) finding.
- Intraventricular conduction delays (8.2%) were more in dengue patients as compared to other fevers.
- Sinus tachycardia (50%) was most common finding in leptospirosis followed by sinus bradycardia, sinus arrhythmia, supraventricular tachycardia, intraventricular conduction delays which had similar incidence.
- Supraventricular tachycardia (5.9%) was found to be more common in leptospirosis patients followed by dengue patients (2.3%) and other tropical fevers.
- Sinus tachycardia (p value 0.009) and sinus bradycardia (p value 0.037) were found to be significant findings in scrub typhus as compared to other tropical fevers.
- Atrial fibrillation (4.8%) was found to be more common in scrub typhus followed by leptospirosis (2.9%) and dengue (0.9%).
- First degree block (1.6%) was more common in scrub typhus followed by dengue fever (1.4%)
- Sinus arrhythmia was found to be more in leptospirosis (5.9%) followed by dengue fever (3.7%) and scrub typhus (1.6%)
- Ventricular Tachycardia was found only in dengue fever (0.9%).
- Pericardial effusion was present in 8.8% (p value of 0.06) leptospirosis patients which was found to be significant as compared to other tropical fevers.

- ST elevated MI was seen in total 9 cases patients out of which 8 (3.7%) cases were seen in dengue fever and 1 case was seen in scrub typhus (1.6%). Non segment ST elevated MI was seen in 1 case in dengue fever (0.5%) and T wave inversion were seen 2 cases in scrub typhus (3.2%)
- Regional wall motion abnormalities (1.7%) and global hypokinesia of left ventricle (6.3%) in tropical fever were not significant findings. Global hypokinesia of left ventricle was present in 14 out of 19 cases in dengue fever, 3 out of 19 cases in scrub typhus, 2 out of 19 cases in leptospirosis. Regional wall motion abnormalities was (total 5 cases) present only in dengue fever.
- Mortality rate observed was 2.3% in given study and was probably due to multiple organ dysfunction with cardiopulmonary arrest.
- Sinus tachycardia and sinus bradycardia in scrub typhus were significant findings in our study. Pericardial effusion in leptospirosis was also found to be a significant finding as compared to other tropical fevers.

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Sr. No	MRD No	Initials	Age	Sex	Date of admission	Date of Discharge/ Dama/ Death	Vitals				Tropical fever serology				Biochemical findings											
							INITIAL HR	FINAL HR	INITIAL BP mmHg	FINAL BP mmHg	DENGUE	LEPTOSPIROSIS	MALARIA	SCRUB TYPHUS	CPKMB ng/ml	TROP T ng/ml	TROP I ng/ml	BNP pg/ml	RATE	REGULAR SINUS RHYTHM	1 DEGREE AV BLOCK	VT	SVT	JUNCTIONAL RHYTHM	SINUS ARRHYTHMIA	ATRIAL FIBRILLATION	PREMATURE COMPLEXES
1	1084302	SK	21	M	12-04-2021	21-04-2021	129	100	110/70	110/70	NO	YES	NO	YES	1.5	0.03	0.08	161	129	YES	NO	NO	NO	NO	NO	NO	NO
2	1085351	AR	29	F	14-04-2021	26-04-2021	120	102	120/70	120/70	YES	NO	NO	YES	1.5	0.03	0.40	100	120	YES	NO	NO	NO	NO	NO	NO	NO
3	1024055	AB	32	F	07-03-2021	19-03-2021	84	80	110/70	110/70	NO	NO	NO	YES	4.3	0.03	0.40	64	84	NO	NO	NO	NO	NO	NO	NO	YES
4	1001954	AK	44	M	18-03-2021	04-04-2021	114	100	110/70	120/70	NO	YES	NO	YES	9.9	0.03	0.05	102	114	YES	NO	NO	NO	NO	NO	NO	NO
5	1186794	AS	55	M	07-10-2021	15-10-2021	55	67	110/70	120/70	NO	NO	NO	YES	4.3	0.03	0.08	82	55	NO	NO	NO	NO	NO	NO	NO	NO
6	1186127	ID	58	M	05-10-2021	11-10-2021	120	106	130/70	130/70	NO	NO	NO	YES	1.0	0.02	0.05	49	120	YES	NO	NO	NO	NO	NO	NO	NO
7	1178350	BS	55	M	22-09-2021	04-10-2021	80	80	100/60	100/60	NO	NO	NO	YES	0.23	0.01	0.03	577	82	NO	NO	NO	NO	NO	NO	NO	NO
8	506627	KB	78	F	27-09-2021	29-09-2021	70	76	110/70	118/76	YES	NO	NO	YES	1.1	0.02	0.05	71	70	NO	NO	NO	NO	NO	NO	NO	NO
9	1171758	DS	55	M	11-09-2021	16-09-2021	98	98	120/70	120/70	NO	NO	NO	YES	0.43	0.01	0.40	82	98	NO	NO	NO	NO	YES	NO	NO	NO
10	1161146	AG	34	M	25-08-2021	04-09-2021	157	130	80/60	100/60	NO	YES	NO	YES	0.13	0.02	0.30	72	157	NO	NO	NO	NO	NO	NO	YES	NO
11	1163354	SD	65	F	28-08-2021	03-09-2021	134	120	90/60	100/70	NO	NO	NO	YES	2.7	0.04	0.05	614	134	NO	NO	NO	NO	NO	NO	YES	NO
12	1159700	HS	41	M	26-08-2021	02-09-2021	134	124	120/70	120/70	NO	NO	NO	YES	0.3	0.04	0.30	54	134	NO	NO	NO	NO	NO	NO	NO	NO
13	1156405	SK	57	F	18-08-2021	30-08-2021	124	116	80/50	100/70	NO	NO	NO	YES	1	0.04	0.05	408	124	NO	NO	NO	NO	NO	NO	NO	NO
14	945738	VK	55	M	24-08-2021	28-08-2021	128	100	110/70	120/70	NO	NO	NO	YES	1.3	0.04	0.05	74	128	NO	NO	NO	NO	NO	NO	NO	NO
15	1161856	KS	45	M	26-08-2021	04-09-2021	117	110	80/50	100/70	NO	NO	NO	YES	0.08	0.01	0.30	1050	117	NO	NO	NO	NO	NO	NO	NO	NO
16	1167707	BD	55	F	08-09-2021	11-09-2021	112	100	100/70	110/80	NO	NO	NO	YES	3.3	0.02	0.05	101	112	NO	NO	NO	NO	NO	NO	NO	NO
17	1167740	M	18	F	05-09-2021	13-09-2021	113	100	110/70	120/70	NO	YES	NO	YES	1.2	0.04	0.05	33	113	NO	NO	NO	NO	NO	NO	NO	NO
18	1164672	GS	28	M	31-08-2021	06-09-2021	104	100	120/70	120/70	YES	NO	NO	YES	0.43	0.03	0.04	78	104	NO	NO	NO	NO	NO	NO	NO	NO
19	1177727	PS	46	M	21-09-2021	28-09-2021	108	102	110/70	120/70	NO	NO	NO	YES	0.2	0.01	0.20	80	108	NO	NO	NO	NO	NO	NO	NO	NO
20	1145673	NS	55	F	30-07-2021	01-09-2021	120	110	100/70	110/70	NO	NO	NO	YES	1.1	0.02	0.05	403	120	NO	NO	NO	NO	YES	NO	NO	NO
21	1147243	MK	56	F	03-08-2021	19-08-2021	138	110	100/70	120/80	NO	NO	NO	YES	0.32	0.01	0.43	20	138	NO	NO	NO	NO	NO	NO	NO	NO
22	1173573	SK	45	F	15-09-2021	23-09-2021	116	100	90/60	100/70	NO	NO	NO	YES	8	0.03	0.05	192	116	NO	NO	NO	NO	NO	NO	NO	NO
23	1183286	AB	69	M	30-09-2021	06-10-2021	88	90	90/70	100/70	NO	NO	NO	YES	5.3	0.03	0.04	661	90	NO	NO	NO	NO	NO	NO	YES	NO
24	1180504	MS	31	M	26-09-2021	03-10-2021	135	120	110/70	120/80	YES	NO	NO	YES	1.3	0.03	0.04	17	135	NO	NO	NO	NO	NO	NO	NO	NO
25	1166887	RD	26	F	03-09-2021	10-09-2021	82	82	100/70	110/70	NO	NO	NO	YES	0.43	0.04	0.40	70	90	YES	NO	NO	NO	NO	NO	NO	NO
26	1179735	CS	67	M	24-09-2021	03-10-2021	114	100	102/70	110/80	NO	NO	NO	YES	0.21	0.01	0.04	221	114	NO	NO	NO	NO	NO	NO	NO	NO
27	179733	H	21	M	24-09-2021	30-09-2021	127	120	116/70	120/70	NO	NO	NO	YES	1.6	0.04	0.05	43	127	NO	NO	NO	NO	NO	NO	NO	NO
28	1188010	JS	30	M	08-10-2021	16-10-2021	122	115	130/70	130/70	NO	NO	NO	YES	0.43	0.04	0.40	72	122	NO	NO	NO	NO	NO	NO	NO	NO
29	1213229	A	25	M	24-11-2021	30-11-2021	118	90	120/70	130/70	NO	NO	NO	YES	0.32	0.01	0.20	80	118	NO	NO	NO	NO	NO	NO	NO	NO
30	1217001	JS	40	M	01-12-2021	08-12-2021	120	110	100/70	110/70	NO	NO	NO	YES	0.32	0.04	0.32	20	120	NO	NO	NO	NO	NO	NO	NO	NO
31	1205124	J	41	F	10-11-2021	18-11-2021	121	110	110/70	110/70	NO	NO	NO	YES	0.43	0.03	0.40	70	121	NO	NO	NO	NO	NO	NO	NO	NO
32	1196496	ND	40	F	23-10-2021	02-11-2021	88	80	110/70	110/70	NO	NO	NO	YES	0.43	0.04	0.40	60	88	YES	NO	NO	NO	NO	NO	NO	NO
33	1190766	KD	54	F	13-10-2021	18-10-2021	111	100	100/70	110/70	YES	NO	NO	YES	0.08	0.02	0.30	88	111	NO	NO	NO	NO	NO	NO	NO	NO
34	1191269	BH	21	F	14-10-2021	18-10-2021	120	100	110/70	110/70	NO	NO	NO	YES	0.13	0.01	0.20	20	120	NO	NO	NO	NO	NO	NO	NO	NO
35	1208352	HS	42	M	15-11-2021	23-11-2021	108	100	110/70	110/70	NO	NO	NO	YES	1	0.03	0.05	283	108	NO	NO	NO	NO	NO	NO	NO	NO
36	1205460	NK	36	M	10-11-2021	12-11-2021	111	90	120/70	120/70	NO	NO	NO	YES	1	0.03	0.05	259	111	NO	NO	NO	NO	NO	NO	NO	NO
37	1201484	RS	70	M	02-11-2021	09-11-2021	131	120	110/70	110/70	NO	NO	NO	YES	2.3	0.03	0.05	38	131	NO	NO	NO	NO	NO	NO	NO	NO
38	316651	K	54	F	13-10-2021	28-10-2021	110	90	110/70	120/70	NO	NO	NO	YES	0.43	0.05	0.40	62	110	NO	NO	NO	NO	NO	NO	NO	NO
39	156997	DK	71	F	21-10-2021	27-10-2021	136	100	120/70	120/70	NO	NO	NO	YES	0.43	0.01	0.05	28	136	NO	NO	NO	NO	NO	NO	NO	NO
40	1190269	SK	38	F	12-10-2021	18-10-2021	112	110	110/70	110/70	NO	NO	NO	YES	0.04	0.03	0.05	48	112	NO	NO	NO	NO	NO	NO	NO	NO
41	1193491	ZA	18	M	19-10-2021	02-11-2021	94	92	110/70	110/70	NO	NO	NO	YES	10.1	0.02	0.05	46.9	94	YES	NO	NO	NO	NO	NO	NO	NO
42	1203394	KS	35	F	07-11-2021	20-11-2021	86	80	110/70	110/70	NO	NO	NO	YES	1.7	0.03	0.05	28.2	80	YES	NO	NO	NO	NO	NO	NO	NO
43	1192366	K	25	F	16-10-2021	21-10-2021	70	70	100/70	110/70	NO	NO	NO	YES	1	0.03	0.05	1530	70	NO	NO	NO	NO	NO	YES	NO	NO
44	1218678	KS	42	M	04-12-2021	23-12-2021	113	100	100/70	110/70	NO	NO	NO	YES	0.43	0.03	0.04	40	113	NO	NO	NO	NO	NO	NO	NO	NO
45	1205331	BW	31	F	10-11-2021	18-11-2021	127	100	110/70	110/70	YES	NO	NO	YES	0.23	0.01	0.37	72	127	NO	NO	NO	NO	NO	NO	NO	NO
46	1202184	AK	28	F	05-11-2021	11-11-2021	135	110	110/70	110/70	NO	NO	NO	YES	1.8	0.01	0.05	2520	135	NO	NO	NO	NO	NO	NO	NO	NO
47	508891	NJ	25	F	21-12-2021	31-12-2021	95	90	110/70	116/76	NO	NO	NO	YES	0.43	0.03	0.05	80	95	NO	NO	NO	NO	NO	NO	NO	NO
48	1192400	PD	69	F	16-10-2021	16-12-2021	127	110	128/72	126/70	NO	NO	NO	YES	3.5	0.03	0.05	383	127	NO	NO	NO	NO	NO	NO	NO	NO
49	1208996	BS	35	M	16-11-2021	05-12-2021	98	90	100/68	120/72	NO	NO	NO	YES	1	0.03	0.05	996	98	YES	NO	NO	NO	NO	NO	NO	NO
50	1204747	SK	49	M	09-11-2021	14-11-2021	115	40	90/70	90/70	NO	NO	NO	YES	11.2	0.03	0.15	2570	115	NO	NO	NO	YES	NO	NO	NO	NO
51	1192631	MI	22	F	18-10-2021	25-10-2021	66	70	110/70	110/70	NO	NO	NO	YES	0.24	0.03	0.05	78	66	NO	NO	NO	NO	NO	NO	NO	YES
52	1202518	MB	26	F	05-11-2021	09-11-2021	92	90	110/70	110/70	NO	NO	NO	YES	0.05	0.02	0.05	80	92	NO	YES	NO	NO	NO	NO	NO	NO
53	1200363	JS	65	M	31-10-2021	07-11-2021	96	90	110/70	110/70	NO	NO	NO	YES	1.5	0.02	0.05	768	90	YES	NO	NO	NO	NO	NO	NO	NO

		ECG findings									X ray findings			2D Echo findings							
Sr. No	MRD No	INTRAVENTRICULAR CONDUCTION DELAY	SINUS BRADYCARDIA	SINUS TACHYCARDIA	PR INTERVAL ms	QTc INTERVAL ms	ST DEPRESSION	T WAVE INVERSION	NSTEMI	STEMI	PERICARDIAL EFFUSION	PLEURAL EFFUSION	CARDIOMEGALY	EF 20%-30%	EF 30%-40%	EF 40%-50%	EF 60%	RWMA	MR	TR	GHK LV
1	1084302	NO	NO	NO	92	438	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
2	1085351	NO	NO	NO	118	438	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
3	1024055	NO	NO	NO	138	405	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
4	1001954	NO	NO	NO	114	409	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
5	1186794	NO	YES	NO	142	413	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
6	1186127	NO	NO	NO	152	426	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
7	1178350	YES	NO	NO	142	488	NO	NO	NO	NO	NO	MILD	NO	NO	YES	NO	NO	NO	NO	NO	NO
8	506627	YES	NO	NO	140	448	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
9	1171758	NO	NO	NO	104	401	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
10	1161146	NO	NO	NO		478	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
11	1163354	NO	NO	NO		478	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
12	1159700	NO	NO	YES	214	440	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
13	1156405	NO	NO	YES	136	426	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
14	945738	NO	NO	YES	126	442	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
15	1161856	NO	NO	YES	166	441	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
16	1167707	NO	NO	YES	130	472	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
17	1167740	NO	NO	YES	132	433	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	MILD	MILD	NO
18	1164672	NO	NO	YES	136	406	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
19	1177727	NO	NO	YES	130	406	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
20	1145673	NO	NO		114	443	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
21	1147243	NO	NO	YES	148	439	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	MILD	NO
22	1173573	NO	NO	YES	136	447	NO	NO	NO	NO	NO	MILD	NO	NO	NO	YES	NO	NO	NO	NO	YES
23	1183286	NO	NO	NO		443	NO	NO	NO	NO	NO	MODERATE	NO	NO	YES	NO	NO	NO	NO	NO	NO
24	1180504	NO	NO	YES	110	481	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO
25	1166887	NO	NO	NO	116	454	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES
26	1179735	NO	NO	YES	160	437	NO	NO	NO	NO	NO	MILD	NO	NO	NO	YES	NO	NO	NO	NO	NO
27	179733	NO	NO	YES	220	457	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
28	1188010	NO	NO	YES	234	444	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
29	1213229	NO	NO	YES	276	422	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
30	1217001	NO	NO	YES	120	449	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	YES
31	1205124	NO	NO	YES	152	452	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
32	1196496	NO	NO	NO	142	452	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
33	1190766	NO	NO	YES	124	415	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
34	1191269	NO	NO	YES	124	415	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
35	1208352	NO	NO	YES	158	477	NO	NO	NO	NO	MINIMAL	MILD	NO	NO	NO	NO	YES	NO	NO	MILD	NO
36	1205460	NO	NO	YES	144	464	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
37	1201484	NO	NO	YES	144	420	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
38	316651	NO	NO	YES	130	450	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
39	156997	NO	NO	YES	120	438	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
40	1190269	NO	NO	YES	140	463	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
41	1193491	NO	NO	NO	190	440	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
42	1203394	NO	NO	NO	120	464	NO	YES	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
43	1192366	NO	NO	NO	132	422	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
44	1218678	NO	NO	YES	128	449	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
45	1205331	NO	NO	YES	150	430	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
46	1202184	NO	NO	YES	114	430	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
47	508891	YES	NO	NO	130	432	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
48	1192400	NO	NO	YES	164	427	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
49	1208996	NO	NO	NO	156	412	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
50	1204747	NO	NO	NO	126		NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
51	1192631	NO	NO	NO	166	329	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
52	1202518	NO	NO	NO	224	442	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
53	1200363	NO	NO	NO	172	421	NO	NO	NO	STEMI	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO

Sr. No	MRD No	Initials	Age	Sex	Date of admission	Date of Discharge/ Dama/ Death	Vitals				Tropical fever serology				Biochemical findings											
							INITIAL HR	FINAL HR	INITIAL BP mmHg	FINAL BP mmHg	DENGUE	LEPTOSPIROSIS	MALARIA	SCRUB TYPHUS	CPKMB ng/ml	TROP T ng/ml	TROP I ng/ml	BNP pg/ml	RATE	REGULAR SINUS RHYTHM	1 DEGREE AV BLOCK	VT	SVT	JUNCTIONAL RHYTHM	SINUS ARRHYTHMIA	ATRIAL FIBRILLATION	PREMATURE COMPLEXES
54	1199056	SM	60	F	28-10-2021	08-11-2021	124	100	110/70	126/78	NO	NO	NO	YES	0.23	0.05	0.05	72	124	NO	NO	NO	NO	NO	NO	NO	NO
55	1210114	P	22	M	19-11-2021	21-11-2021	115	100	110/70	110/70	NO	NO	NO	YES	3.5	0.02	0.08	331	115	NO	NO	NO	NO	NO	NO	NO	NO
56	1203800	C	28	M	08-11-2021	15-11-2021	145	120	110/70	110/70	NO	NO	NO	YES	1	0.02	0.05	174	145	NO	NO	NO	NO	NO	NO	NO	NO
57	1201568	SK	51	F	02-11-2021	09-11-2021	108	100	110/70	120/70	NO	NO	NO	YES	1	0.03	0.05	247	108	NO	NO	NO	NO	NO	NO	NO	NO
58	1196618	K	30	F	24-10-2021	26-10-2021	97	90	110/70	110/70	YES	NO	NO	YES	0.4	0.02	0.05	80	97	NO	NO	NO	NO	NO	NO	NO	YES
59	1197295	KK	60	F	25-10-2021	28-10-2021	112	90	110/70	110/70	NO	YES	NO	YES	0.43	0.05	0.05	70	112	NO	NO	NO	NO	NO	NO	NO	NO
60	1222567	SL	65	M	11-12-2021	13-12-2021	57	60	90/70	100/70	NO	YES	NO	NO	3.9	0.01	0.05	398	57	NO	NO	NO	NO	NO	NO	NO	NO
61	1202475	SA	26	F	05-11-2021	11-11-2021	110	100	110/70	110/70	NO	YES	NO	NO	0.43	0.01	0.40	70	110	NO	NO	NO	NO	NO	NO	NO	NO
62	1205416	AG	34	F	11-11-2021	23-11-2021	140	100	120/70	120/70	NO	YES	NO	NO	1	0.01	0.05	36.7	140	NO	NO	NO	YES	NO	NO	NO	NO
63	1180338	BS	40	M	25-09-2021	20-10-2021	112	100	120/70	120/70	NO	YES	NO	NO	0.41	0.01	0.02	40	112	NO	NO	NO	NO	NO	NO	NO	NO
64	1188745	SA	18	M	10-10-2021	14-10-2021	159	130	110/70	120/70	NO	YES	NO	NO	0.2	0.01	0.03	32	159	NO	NO	NO	NO	NO	NO	NO	NO
65	1165368	JS	40	M	01-09-2021	09-09-2021	112	100	100/60	100/70	NO	YES	NO	NO	8	0.02	0.15	1180	112	NO	NO	NO	NO	NO	NO	NO	NO
66	1206736	NB	65	F	12-11-2021	29-11-2021	90	90	120/70	120/72	NO	YES	NO	NO	0.41	0.02	0.01	32	90	NO	NO	NO	NO	NO	YES	NO	NO
67	1059407	JC	49	M	19-10-2021	28-10-2021	113	82	114/70	120/70	NO	YES	NO	NO	0.2	0.01	0.02	98	113	NO	NO	NO	NO	NO	NO	NO	NO
68	1195275	HB	52	F	22-10-2021	26-10-2021	118	110	110/70	110/70	NO	YES	NO	NO	0.12	0.01	0.02	52	118	NO	NO	NO	NO	NO	NO	NO	NO
69	1147213	VK	45	M	02-08-2021	04-08-2021	108	100	100/70	100/70	NO	YES	NO	NO	0.1	0.02	0.01	72	108	NO	NO	NO	NO	NO	NO	NO	NO
70	1142565	KS	75	F	25-07-2021	30-07-2021	126	102	110/70	110/70	NO	YES	NO	NO	7.2	0.01	0.05	272	126	NO	NO	NO	NO	NO	NO	NO	NO
71	1068821	NS	44	M	29-03-2021	07-04-2021	112	98	110/70	110/70	NO	YES	NO	NO	0.02	0.01	0.02	72	113	NO	NO	NO	NO	NO	NO	NO	NO
72	1022005	JK	35	F	03-03-2021	12-03-2021	140	100	100/70	100/70	NO	YES	NO	NO	0.24	0.01	0.05	982	140	NO	NO	NO	NO	NO	NO	NO	NO
73	1004831	SD	55	M	25-03-2021	27-03-2021	108	100	110/70	110/70	NO	YES	NO	NO	0.4	0.01	0.05	42	108	NO	NO	NO	NO	NO	NO	NO	NO
74	1078281	A	25	F	07-04-2021	13-04-2021	123	92	120/70	120/70	NO	YES	NO	NO	0.3	0.02	0.01	17	123	NO	NO	NO	NO	NO	NO	NO	NO
75	1147833	NJ	60	F	03-08-2021	28-08-2021	161	120	110/70	120/70	NO	YES	NO	NO	0.05	0.03	0.02	32	161	NO	NO	NO	YES	NO	NO	NO	NO
76	316651	K	54	F	13-10-2021	28-10-2021	109	90	110/70	110/70	NO	YES	NO	NO	0.32	0.01	0.02	34	109	NO	NO	NO	NO	NO	NO	NO	NO
77	1200224	AA	43	M	30-10-2021	03-11-2021	80	82	110/70	110/70	NO	YES	NO	NO	2.3	0.01	0.02	20	80	NO	NO	NO	NO	NO	NO	NO	NO
78	1163393	SS	29	M	29-08-2021	03-09-2021	72	70	110/70	110/70	NO	YES	NO	NO	4	0.03	0.4	40	70	YES	NO	NO	NO	NO	NO	NO	NO
79	1025413	TJ	56	M	09-03-2021	23-03-2021	80	80	130/70	130/70	NO	YES	NO	NO	0.1	0.03	0.02	5	80	YES	NO	NO	NO	NO	NO	NO	NO
80	1195850	MK	65	F	22-10-2021	28-10-2021	72	72	110/70	110/70	NO	YES	NO	NO	0.12	0.01	0.01	70	72	YES	NO	NO	NO	NO	NO	NO	NO
81	1138230	JK	37	M	16-07-2021	19-07-2021	125	106	116/72	112/80	NO	NO	YES	NO	2.6	0.02	0.05	23	125	NO	NO	NO	NO	NO	NO	NO	YES
82	182544	G	37	M	22-09-2021	26-09-2021	112	98	108/60	120/70	NO	NO	YES	NO	1.2	0.01	0.2	62	112	NO	NO	NO	NO	NO	NO	NO	NO
83	1184488	M	50	M	03-10-2021	07-10-2021	129	100	112/74	124/70	NO	NO	YES	YES	0.4	0.02	0.01	30	129	NO	NO	NO	NO	NO	NO	NO	NO
84	1190737	GS	19	F	13-10-2021	18-10-2021	59	65	100/70	110/70	YES	NO	NO	NO	0.2	0.01	0.05	72	59	NO	NO	NO	NO	NO	NO	NO	NO
85	1196835	RG	21	M	25-10-2021	27-10-2021	57	62	100/70	110/70	YES	NO	NO	NO	2.4	0.01	0.02	32	57	NO	NO	NO	NO	NO	NO	NO	NO
86	1038099	TS	25	F	10-11-2021	12-11-2021	134	99	100/70	110/80	YES	NO	NO	NO	1.2	0.01	0.05	82	134	NO	NO	NO	NO	NO	NO	NO	NO
87	1197865	SS	62	M	26-10-2021	09-11-2021	120	112	80/50	100/70	YES	NO	NO	NO	1.2	0.01	0.2	160	120	NO	NO	NO	NO	NO	NO	NO	NO
88	1204168	RA	29	M	08-11-2021	12-11-2021	54	68	100/70	110/70	YES	NO	NO	NO	1	0.02	0.2	23	54	NO	NO	NO	NO	NO	NO	NO	NO
89	1202987	SJ	60	F	06-11-2021	11-11-2021	48	60	110/70	120/70	YES	NO	NO	NO	1.2	0.01	0.3	50	48	NO	NO	NO	NO	NO	NO	NO	NO
90	1207429	HS	44	M	13-11-2021	17-11-2021	124	110	110/70	120/70	YES	NO	NO	NO	1.3	0.01	0.12	20	124	NO	NO	NO	NO	NO	NO	NO	NO
91	152133	IS	37	M	09-11-2021	14-11-2021	50	70	102/70	120/76	YES	NO	NO	NO	2	0.03	0.2	18	51	NO	NO	NO	NO	NO	NO	NO	NO
92	1215905	SC	45	M	29-11-2021	03-12-2021	112	80	100/78	120/72	YES	NO	NO	NO	3.2	0.01	0.3	72	112	NO	NO	NO	NO	NO	NO	NO	NO
93	1210090	PA	46	M	18-11-2021	18-12-2021	137	102	80/40	100/70	YES	NO	NO	NO	3.6	0.02	0.2	210	137	NO	NO	NO	NO	NO	NO	NO	NO
94	1171992	RS	48	M	12-09-2021	20-09-2021	70	70	110/70	110/70	YES	NO	NO	NO	2.8	0.01	0.18	82	70	NO	NO	NO	NO	NO	NO	NO	NO
95	1189213	SK	48	M	11-10-2021	16-10-2021	90	90	110/70	110/70	YES	NO	NO	NO	1.2	0.01	0.17	25	90	YES	NO	NO	NO	NO	NO	NO	NO
96	1189450	SS	80	M	11-10-2021	18-10-2021	86	80	116/74	120/80	YES	NO	NO	NO	1.8	0.01	0.18	61	80	YES	NO	NO	NO	NO	NO	NO	NO
97	1172658	SK	32	M	13-09-2021	18-09-2021	112	88	110/70	120/70	YES	NO	NO	NO	2.8	0.03	0.05	44	112	NO	NO	NO	NO	NO	NO	NO	NO
98	1201106	SR	68	F	01-11-2021	13-11-2021	111	92	100/70	110/70	YES	NO	NO	NO	2	0.01	0.20	23	111	NO	NO	NO	NO	NO	NO	NO	NO
99	1264799	SK	32	F	09-11-2021	12-11-2021	48	60	100/70	110/70	YES	NO	NO	NO	3.2	0.01	0.30	50	48	NO	NO	NO	NO	NO	NO	NO	NO
100	1205376	KS	74	M	10-11-2021	14-11-2021	78	70	90/60	100/70	YES	NO	NO	NO	0.53	0.01	3.1	82	78	YES	NO	NO	NO	NO	NO	NO	NO
101	1156570	J	32	M	13-11-2021	20-11-2021	77	70	110/70	110/70	YES	NO	NO	NO	1.2	0.01	0.2	23	77	YES	NO	NO	NO	NO	NO	NO	NO
102	1183183	AK	28	M	30-09-2021	04-10-2021	114	40	80/60	40/20	YES	NO	NO	NO	4	0.02	3.96	1850	114	NO	NO	NO	YES	NO	NO	NO	NO
103	1207358	PK	51	M	13-11-2021	14-11-2021	129	53	80/50	50/20	YES	NO	NO	NO	1	0.01	1.97	1580	129	NO	NO	NO	NO	NO	NO	NO	NO
104	128265	HS	70	M	22-10-2021	23-10-2021	115	42	70/50	40/10	YES	NO	NO	NO	2.8	0.1	9.3	800	115	NO	NO	NO	NO	NO	NO	NO	NO
105	135764	PK	40	F	22-10-2021	23-10-2021	97	30	90/50	40/20	YES	NO	NO	NO	20.9	10	30	5000	97	NO	NO	YES	NO	NO	NO	NO	NO
106	1214472	PS	65	M	26-11-2021	04-12-2021	132	100	110/70	120/70	YES	NO	NO	NO	2.4	0.01	0.21	32	132	YES	NO	NO	NO	NO	NO	NO	NO

		ECG findings									X ray findings			2D Echo findings							
Sr. No	MRD No	INTRAVENTRICULAR CONDUCTION DELAY	SINUS BRADYCARDIA	SINUS TACHYCARDIA	PR INTERVAL ms	QTc INTERVAL ms	ST DEPRESSION	T WAVE INVERSION	NSTEMI	STEMI	PERICARDIAL EFFUSION	PLEURAL EFFUSION	CARDIOMEGALY	EF 20%-30%	EF 30%-40%	EF 40%-50%	EF 60%	RWMA	MR	TR	GHK LV
54	1199056	NO	NO	YES	160	481	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
55	1210114	NO	NO	YES	162	440	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
56	1203800	NO	NO	YES	198	492	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
57	1201568	NO	NO	YES	138	409	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
58	1196618	NO	NO	NO	176	392	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
59	1197295	NO	NO	YES	140	441	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
60	1222567	NO	YES	NO	140	397	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
61	1202475	NO	NO	YES	104	492	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
62	1205416	NO	NO	NO	100	471	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
63	1180338	NO	NO	YES	136	467	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
64	1188745	NO	NO	YES	170	467	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
65	1165368	NO	NO	YES	198	413	NO	NO	NO	NO	MILD	MODERATE	YES	NO	YES	NO	NO	NO	NO	NO	YES
66	1206736	NO	NO	NO	122	415	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
67	1059407	NO	NO	YES	146	423	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
68	1195275	NO	NO	YES	136	483	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
69	1147213	NO	NO	YES	146	428	NO	NO	NO	NO	MILD	NO	NO	YES	NO	NO	NO	NO	NO	NO	YES
70	1142565	NO	NO	YES	94	462	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
71	1068821	NO	NO	YES	92	457	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
72	1022005	NO	NO	YES	132	546	NO	NO	NO	NO	MILD	MILD	NO	NO	YES	NO	NO	NO	NO	NO	NO
73	1004831	NO	NO	YES	134	442	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO	NO
74	1078281	NO	NO	YES	138	425	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
75	1147833	NO	NO	NO	104	434	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
76	316651	NO	NO	YES	130	456	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
77	1200224	NO	NO	NO	92	443	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
78	1163393	NO	NO	NO	172	492	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
79	1025413	NO	NO	NO	172	480	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
80	1195850	NO	NO	NO	196	474	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
81	1138230	NO	NO	NO	120	419	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
82	182544	NO	NO	YES	134	423	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
83	1184488	NO	NO	YES	130	421	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
84	1190737	NO	YES	NO	88	429	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
85	1196835	NO	YES	NO	128	362	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
86	1038099	NO	NO	YES	128	413	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
87	1197865	YES	NO	NO	154	463	NO	NO	NO	NO	NO	MILD	NO	NO	NO	YES	NO	NO	NO	NO	YES
88	1204168	NO	YES	NO	110	348	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
89	1202987	NO	YES	NO	168	412	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
90	1207429	NO	NO	YES	132	434	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
91	152133	NO	YES	NO	116	385	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
92	1215905	NO	NO	YES	144	424	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
93	1210090	NO	NO	YES	106	433	NO	NO	NO	NO	MINIMAL	MILD	NO	NO	NO	YES	NO	NO	NO	NO	YES
94	1171992	YES	NO	NO	158	434	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
95	1189213	NO	NO	NO	110	412	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
96	1189450	NO	NO	NO	112	464	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
97	1172658	NO	NO	YES	118	444	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
98	1201106	NO	NO	YES	146	445	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
99	1264799	NO	YES	NO	134	432	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
100	1205376	NO	NO	NO	136	440	NO	NO	NO	NO	NO	MILD	NO	YES	NO	NO	NO	YES	MODERATE	NO	NO
101	1156570	NO	NO	NO	100	371	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
102	1183183	NO	NO	NO	116	471	NO	NO	NO	NO	NO	MODERATE	NO	YES	NO	NO	NO	NO	NO	NO	YES
103	1207358	NO	NO	YES	144	509	NO	NO	NO	YES	NO	MODERATE	NO	NO	YES	NO	NO	NO	NO	NO	NO
104	128265	NO	NO	YES	146	475	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	NO	NO	NO	NO	NO
105	135764	NO	NO	NO	150	461	NO	NO	NO	YES	MILD	MODERATE	NO	NO	NO	NO	NO	NO	NO	NO	NO
106	1214472	NO	NO	NO	140	442	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO

Sr. No	MRD No	Initials	Age	Sex	Date of admission	Date of Discharge/ Dama/ Death	Vitals				Tropical fever serology				Biochemical findings												
							INITIAL HR	FINAL HR	INITIAL BP mmHg	FINAL BP mmHg	DENGUE	LEPTOSPIROSIS	MALARIA	SCRUB TYPHUS	CPKMB ng/ml	TROP T ng/ml	TROP I ng/ml	BNP pg/ml	RATE	REGULAR SINUS RHYTHM	1 DEGREE AV BLOCK	VT	SVT	JUNCTIONAL RHYTHM	SINUS ARRHYTHMIA	ATRIAL FIBRILLATION	PREMATURE COMPLEXES
107	186207	M	31	M	07-12-2021	11-12-2021	112	90	100/70	112/72	YES	NO	NO	NO	2.4	0.01	0.23	72	112	NO	NO	NO	NO	NO	NO	NO	NO
108	744053	JM	19	M	13-10-2021	19-10-2021	65	70	110/70	120/70	YES	NO	NO	NO	3.2	0.01	0.32	72	65	YES	NO	NO	NO	NO	NO	NO	NO
109	1188892	GC	25	M	10-10-2021	23-10-2021	114	100	104/68	124/80	YES	NO	NO	NO	1.2	0.01	0.3	30	114	YES	NO	NO	NO	NO	NO	NO	NO
110	11094648	RG	41	M	21-10-2021	25-10-2021	120	92	100/70	110/70	YES	NO	NO	NO	1.6	0.01	0.05	90	120	NO	NO	NO	NO	NO	NO	NO	NO
111	1203288	KG	38	F	07-11-2021	10-11-2021	110	90	106/70	120/70	YES	NO	NO	NO	1.8	0.01	0.18	12	110	NO	NO	NO	NO	NO	NO	NO	NO
112	1197359	N	38	F	25-10-2021	29-10-2021	99	80	110/70	120/70	YES	NO	NO	NO	3.7	0.01	0.32	62	99	YES	NO	NO	NO	NO	NO	NO	NO
113	1197354	K	25	F	25-10-2021	29-10-2021	114	100	110/70	120/70	YES	NO	NO	NO	1.8	0.01	0.05	40	114	NO	NO	NO	NO	NO	NO	NO	NO
114	521137	RS	41	F	25-10-2021	30-10-2021	95	96	106/70	110/70	YES	NO	NO	NO	1.8	0.02	0.05	72	95	NO	NO	NO	NO	NO	NO	NO	YES
115	1197148	RG	45	M	25-10-2021	29-10-2021	120	100	112/72	120/70	YES	NO	NO	NO	3.2	0.01	0.05	24	120	NO	NO	NO	NO	NO	NO	NO	NO
116	1194594	PG	42	F	20-10-2021	27-10-2021	117	100	118/68	126/76	YES	NO	NO	NO	3.6	0.02	0.04	62	117	NO	NO	NO	NO	NO	NO	NO	NO
117	1195698	KR	36	F	22-10-2021	30-10-2021	70	72	108/70	120/70	YES	NO	NO	NO	1.8	0.01	0.02	40	70	YES	NO	NO	NO	NO	NO	NO	NO
118	1196696	SS	83	M	25-10-2021	30-10-2021	75	70	100/70	100/70	YES	NO	NO	NO	3.6	0.01	0.02	42	75	NO	YES	NO	NO	NO	NO	NO	NO
119	1196665	HS	39	M	24-10-2021	29-10-2021	92	90	110/70	110/70	YES	NO	NO	NO	1.7	0.01	0.1	55	90	YES	NO	NO	NO	NO	NO	NO	NO
120	1197320	SA	39	M	25-10-2021	31-10-2021	70	70	120/70	120/70	YES	NO	NO	NO	2.8	0.01	0.02	72	70	NO	NO	NO	NO	NO	NO	NO	NO
121	1200346	P	25	F	31-10-2021	02-11-2021	111	100	110/70	110/70	YES	NO	NO	NO	1.2	0.01	0.05	62	111	NO	NO	NO	NO	NO	NO	NO	NO
122	1197327	RK	28	M	25-10-2021	31-10-2021	60	60	110/70	110/70	YES	NO	NO	NO	0.1	0.01	0.05	42	60	YES	NO	NO	NO	NO	NO	NO	NO
123	1200327	H	33	F	31-10-2021	03-11-2021	119	90	110/70	110/70	YES	NO	NO	NO	1.6	0.01	0.01	32	119	NO	NO	NO	NO	NO	NO	NO	NO
124	1200409	GS	41	M	31-10-2021	03-11-2021	39	60	100/70	110/70	YES	NO	NO	NO	0.01	0.02	0.1	62	39	NO	NO	NO	NO	NO	NO	NO	NO
125	1199729	NJ	33	F	29-10-2021	02-11-2021	140	100	110/70	120/70	YES	NO	NO	NO	1.2	0.01	0.2	24	114	NO	NO	NO	NO	NO	NO	NO	NO
126	1200446	LG	24	M	01-11-2021	04-11-2021	93	90	110/70	110/70	YES	NO	NO	NO	1.7	0.01	0.2	32	93	YES	NO	NO	NO	NO	NO	NO	NO
127	1200459	RK	52	M	31-10-2021	05-10-2021	120	100	110/70	120/70	YES	NO	NO	NO	1.9	0.01	0.2	72	120	NO	NO	NO	NO	NO	NO	NO	NO
128	508193	N	38	F	02-11-2021	07-11-2021	128	88	102/68	120/70	YES	NO	NO	NO	3.2	0.02	0.12	72	128	NO	NO	NO	NO	NO	NO	NO	NO
129	1200262	NK	25	F	30-10-2021	11-11-2021	54	72	90/60	110/70	YES	NO	NO	NO	3	0.01	0.05	160	54	NO	NO	NO	NO	NO	NO	NO	NO
130	1200406	JK	52	F	31-10-2021	03-11-2021	84	80	110/70	120/70	YES	NO	NO	NO	1.7	0.01	0.23	23	84	NO	NO	NO	NO	NO	NO	NO	YES
131	1203861	SK	52	M	08-11-2021	11-11-2021	80	90	107/80	120/70	YES	NO	NO	NO	3.8	0.01	0.05	116	80	YES	NO	NO	NO	NO	NO	NO	NO
132	1202582	PK	29	F	06-11-2021	10-11-2021	80	96	102/60	124/78	YES	NO	NO	NO	2.2	0.01	0.02	106	80	YES	NO	NO	NO	NO	NO	NO	NO
133	839129	S	49	F	31-10-2021	07-11-2021	70	72	110/70	118/72	YES	NO	NO	NO	3.6	0.01	0.20	24	70	NO	NO	NO	NO	NO	YES	NO	NO
134	1200488	RK	50	M	01-11-2021	06-11-2021	70	70	110/70	110/70	YES	NO	NO	NO	1.2	0.01	0.20	72	70	YES	NO	NO	NO	NO	NO	NO	NO
135	1199752	R	18	M	30-10-2021	07-11-2021	70	80	90/70	100/70	YES	NO	NO	NO	1.8	0.01	0.3	280	70	YES	NO	NO	NO	NO	NO	NO	NO
136	1203376	A	50	F	07-11-2021	10-11-2021	58	64	101/70	120/70	YES	NO	NO	NO	3.6	0.01	0.05	50	58	NO	NO	NO	NO	NO	NO	NO	NO
137	1201233	SD	37	F	07-11-2021	11-11-2021	49	60	100/70	120/70	YES	NO	NO	NO	2.8	0.01	0.05	26	49	NO	NO	NO	NO	NO	NO	NO	NO
138	1201558	S	46	F	02-11-2021	05-11-2021	117	98	110/70	110/70	YES	NO	NO	NO	2.0	0.01	0.2	26	117	NO	NO	NO	NO	NO	NO	NO	NO
139	1200439	SS	25	M	31-10-2021	06-11-2021	124	100	110/70	130/70	YES	NO	NO	NO	1.8	0.01	0.2	72	124	NO	NO	NO	NO	NO	NO	NO	NO
140	1202408	AG	61	M	05-11-2021	09-11-2021	96	98	110/70	118/70	YES	NO	NO	NO	0.01	0.01	0.05	26	96	YES	NO	NO	NO	NO	NO	NO	NO
141	1201536	SK	73	F	02-11-2021	06-11-2021	115	100	110/70	120/70	YES	NO	NO	NO	1.9	0.01	0.1	28	115	NO	NO	NO	NO	NO	NO	NO	NO
142	1201918	RG	50	F	03-11-2021	09-11-2021	72	76	110/70	120/80	YES	NO	NO	NO	3	0.01	0.05	16	72	NO	NO	NO	NO	NO	YES	NO	NO
143	714387	JR	70	F	25-10-2021	08-11-2021	109	90	110-/70	120/70	YES	NO	NO	NO	0.01	0.01	0.05	18	109	NO	NO	NO	NO	NO	NO	NO	NO
144	1207857	HS	46	M	15-11-2021	24-11-2021	120	95	120/70	120/70	YES	NO	NO	NO	2	0.01	0.05	126	120	NO	NO	NO	NO	NO	NO	NO	NO
145	1209749	K	32	M	18-11-2021	24-11-2021	136	100	90/70	120/70	YES	NO	NO	NO	3.6	0.02	0.05	172	134	NO	NO	NO	NO	NO	NO	NO	NO
146	216589	M	26	M	18-11-2021	21-11-2021	120	100	110/70	120/70	YES	NO	NO	NO	1.4	0.01	0.05	62	120	NO	NO	NO	NO	NO	NO	NO	NO
147	1205569	M	55	F	11-11-2021	18-11-2021	105	90	110/70	120/70	YES	NO	NO	NO	0.3	0.01	0.05	76	105	NO	NO	NO	NO	NO	NO	NO	NO
148	1210098	KS	60	M	18-11-2021	24-11-2021	85	80	110/70	110/70	YES	NO	NO	NO	1.9	0.02	0.05	72	85	YES	NO	NO	NO	NO	NO	NO	NO
149	1213602	AS	24	M	25-11-2021	28-11-2021	67	70	110/70	120/70	YES	NO	NO	NO	1.2	0.01	0.05	54	67	NO	NO	NO	NO	NO	YES	NO	NO
150	1212660	RK	46	M	23-11-2021	29-11-2021	90	96	110/70	120/70	YES	NO	NO	NO	1.6	0.01	0.05	23	96	YES	NO	NO	NO	NO	NO	NO	NO
151	1206759	M	20	F	13-11-2021	19-11-2021	120	100	90/60	100/70	YES	NO	NO	NO	0.01	0.03	0.05	160	122	NO	NO	NO	NO	NO	NO	NO	NO
152	1184281	NS	45	F	02-10-2021	05-10-2021	128	97	110/70	120/70	YES	NO	NO	NO	0.4	0.01	0.05	26	128	NO	NO	NO	NO	NO	NO	NO	NO
153	1208949	AB	23	M	16-11-2021	24-11-2021	107	100	110/70	110/70	YES	NO	NO	NO	1.8	0.01	0.32	72	107	NO	NO	NO	NO	NO	NO	NO	YES
154	1212483	SK	70	F	23-11-2021	29-11-2021	116	98	110/70	120/70	YES	NO	NO	NO	1.6	0.02	0.05	28	116	NO	NO	NO	NO	NO	NO	NO	NO
155	1212638	MS	60	M	23-11-2021	27-11-2021	62	70	110/70	110/70	YES	NO	NO	NO	2.6	0.01	0.26	18	62	NO	NO	NO	NO	NO	NO	NO	YES
156	1211011	HS	18	M	20-11-2021	23-11-2021	54	70	110/70	120/70	YES	NO	NO	NO	1.6	0.01	0.11	16	54	NO	NO	NO	NO	NO	YES	NO	NO
157	1211134	SS	22	M	21-11-2021	27-11-2021	86	90	120/70	120/70	YES	NO	NO	NO	1.7	0.01	0.05	18	96	YES	NO	NO	NO	NO	NO	NO	NO
158	1212666	BR	44	M	23-11-2021	06-12-2021	122	97	80/60	100/70	YES	NO	NO	NO	5	0.03	0.5	325	122	NO	NO	NO	NO	NO	NO	NO	NO
159	1218282	HJ	46	M	04-12-2021	09-12-2021	114	80	110/70	110/70	YES	NO	NO	NO	3.2	0.01	0.3	60	114	NO	NO	NO	NO	NO	NO	NO	NO

		ECG findings									X ray findings			2D Echo findings							
Sr. No	MRD No	INTRAVENTRICULAR CONDUCTION DELAY	SINUS BRADYCARDIA	SINUS TACHYCARDIA	PR INTERVAL ms	QTc INTERVAL ms	ST DEPRESSION	T WAVE INVERSION	NSTEMI	STEMI	PERICARDIAL EFFUSION	PLEURAL EFFUSION	CARDIOMEGALY	EF 20%-30%	EF 30%-40%	EF 40%-50%	EF 60%	RWMA	MR	TR	GHK LV
107	186207	NO	NO	YES	154	422	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
108	744053	NO	NO	NO	104	378	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
109	1188892	NO	NO	NO	154	468	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
110	11094648	NO	NO	YES	130	425	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
111	1203288	NO	NO	YES	130	423	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
112	1197359	NO	NO	NO	114	522	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
113	1197354	NO	NO	YES	126	433	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
114	521137	NO	NO	NO	112	410	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
115	1197148	NO	NO	YES	152	415	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
116	1194594	NO	NO	YES	138	423	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
117	1195698	NO	NO	NO	116	481	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
118	1196696	NO	NO	NO	228	446	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
119	1196665	NO	NO	NO	114	437	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
120	1197320	YES	NO	NO	138	398	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
121	1200346	NO	NO	YES	140	429	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
122	1197327	NO	NO	NO	110	392	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
123	1200327	NO	NO	YES	138	438	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
124	1200409	NO	YES	NO	120	425	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
125	1199729	NO	NO	YES	128	435	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
126	1200446	NO	NO	NO	116	433	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
127	1200459	NO	NO	YES	140	441	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
128	508193	NO	NO	YES	148	435	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
129	1200262	NO	YES	NO	120	419	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
130	1200406	NO	NO	NO	146	439	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
131	1203861	NO	NO	NO	118	409	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
132	1202582	NO	NO	NO	130	476	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
133	839129	NO	NO	NO	126	516	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
134	1200488	NO	NO	NO	118	470	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
135	1199752	NO	NO	NO	142	474	NO	NO	NO	NO	NO	NO	YES	NO	NO	YES	NO	NO	NO	NO	YES
136	1203376	NO	YES	NO	106	381	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
137	1201233	NO	YES	NO	114	440	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
138	1201558	NO	NO	YES	134	420	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
139	1200439	NO	NO	YES	96	416	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
140	1202408	NO	NO	NO	108	414	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
141	1201536	NO	NO	NO	154	438	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
142	1201918	NO	NO	NO	128	468	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
143	714387	NO	NO	YES	206	525	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
144	1207857	NO	NO	YES	122	435	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
145	1209749	NO	NO	YES	136	445	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
146	216589	NO	NO	YES	138	413	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
147	1205569	NO	NO	YES	166	451	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
148	1210098	NO	NO	NO	150	473	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
149	1213602	NO	NO	NO	156	361	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
150	1212660	NO	NO	NO	128	528	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
151	1206759	NO	NO	YES	132	436	NO	NO	NO	NO	NO	MILD	NO	NO	NO	YES	NO	NO	NO	NO	YES
152	1184281	NO	NO	YES	150	432	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
153	1208949	NO	NO	NO	128	420	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
154	1212483	NO	NO	YES	142	440	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
155	1212638	NO	NO	NO	164	413	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
156	1211011	NO	NO	NO	142	367	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
157	1211134	NO	NO	NO	116	414	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
158	1212666	NO	NO	YES	130	460	NO	NO	YES	NO	NO	MODERATE	NO	YES	NO	NO	NO	NO	NO	NO	NO
159	1218282	NO	NO	YES	106	423	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO

Sr. No	MRD No	Initials	Age	Sex	Date of admission	Date of Discharge/ Dama/ Death	Vitals				Tropical fever serology				Biochemical findings												
							INITIAL HR	FINAL HR	INITIAL BP mmHg	FINAL BP mmHg	DENGUE	LEPTOSPIROSIS	MALARIA	SCRUB TYPHUS	CPKMB ng/ml	TROP T ng/ml	TROP I ng/ml	BNP pg/ml	RATE	REGULAR SINUS RHYTHM	1 DEGREE AV BLOCK	VT	SVT	JUNCTIONAL RHYTHM	SINUS ARRHYTHMIA	ATRIAL FIBRILLATION	PREMATURE COMPLEXES
160	1211212	GK	35	F	21-11-2021	26-11-2021	77	80	116/74	126/70	YES	NO	NO	NO	2.6	0.01	0.2	34	77	YES	NO	NO	NO	NO	NO	NO	NO
161	1222833	JR	68	M	12-12-2021	23-12-2021	86	82	90/70	100/70	YES	NO	NO	NO	0.05	0.01	0.2	87	86	NO	NO	NO	NO	NO	NO	NO	NO
162	1208988	DM	29	M	16-11-2021	23-11-2021	113	96	120/70	120/70	YES	NO	NO	NO	1.6	0.02	0.2	56	113	NO	NO	NO	NO	NO	NO	NO	NO
163	1160510	RD	59	F	25-08-2021	30-08-2021	87	82	110/70	110/70	YES	NO	NO	NO	3.6	0.01	0.05	32	87	YES	NO	NO	NO	NO	NO	NO	NO
164	1160426	MJ	44	F	24-08-2021	01-09-2021	46	64	100/70	116/68	YES	NO	NO	NO	1.2	0.01	0.2	60	46	NO	NO	NO	NO	NO	NO	NO	NO
165	1123338	SD	85	F	16-06-2021	23-06-2021	81	60	100/70	100/70	YES	NO	NO	NO	1.6	0.01	0.1	50	81	NO	NO	NO	NO	NO	NO	YES	NO
166	1062686	NS	26	M	23-03-2021	29-03-2021	123	104	120/70	126/80	YES	NO	NO	NO	2.4	0.02	0.3	60	123	NO	NO	NO	NO	NO	NO	NO	NO
167	1023772	AA	21	M	05-09-2021	13-09-2021	110	90	110/70	118/70	YES	NO	NO	NO	1.8	0.01	0.2	20	110	NO	NO	NO	NO	NO	NO	NO	NO
168	1213238	RK	46	M	24-11-2021	01-12-2021	100	94	110/72	110/70	YES	NO	NO	NO	1.6	0.01	0.2	60	100	YES	NO	NO	NO	NO	NO	NO	NO
169	1216506	MS	27	M	30-11-2021	04-12-2021	76	78	120/70	120/70	YES	NO	NO	NO	2.6	0.02	0.3	20	76	YES	NO	NO	NO	NO	NO	NO	NO
170	1169264	SS	52	M	07-09-2021	14-09-2021	42	64	120/70	120/70	YES	NO	NO	NO	1.8	0.01	0.2	50	42	NO	NO	NO	NO	NO	NO	NO	NO
171	1184135	GS	32	M	02-10-2021	05-10-2021	66	70	112/70	120/70	YES	NO	NO	NO	2.3	0.01	0.2	23	66	NO	NO	NO	NO	YES	NO	NO	NO
172	1184044	HA	66	M	01-10-2021	05-10-2021	110	90	108/70	118/76	YES	NO	NO	NO	3.8	0.01	0.1	33	110	NO	NO	NO	NO	NO	NO	NO	NO
173	1181827	KL	68	M	28-09-2021	01-10-2021	46	62	102/60	100/70	YES	NO	NO	NO	3.0	0.02	0.1	20	46	NO	NO	NO	NO	NO	NO	NO	NO
174	1176031	JS	80	M	18-09-2021	25-09-2021	85	88	90/60	100/70	YES	NO	NO	NO	5	0.04	0.5	500	85	NO	NO	NO	NO	NO	NO	NO	YES
175	1173416	SR	64	F	14-09-2021	23-09-2021	92	90	120/70	120/70	YES	NO	NO	NO	1.5	0.01	0.05	10	92	YES	NO	NO	NO	NO	NO	NO	NO
176	1184458	MC	25	M	03-10-2021	07-10-2021	114	90	110/70	120/70	YES	NO	NO	NO	0.05	0.01	0.1	70	114	NO	NO	NO	NO	NO	NO	NO	NO
177	1184504	MD	53	F	04-10-2021	07-10-2021	65	70	100/70	102/72	YES	NO	NO	NO	0.2	0.01	0.1	20	65	YES	NO	NO	NO	NO	NO	NO	NO
178	1184505	PG	39	M	04-10-2021	07-10-2021	80	80	110/70	110/70	YES	NO	NO	NO	11.1	6	1.65	285	80	YES	NO	NO	NO	NO	NO	NO	NO
179	1184331	HK	64	F	03-10-2021	09-10-2021	113	96	120/70	120/70	YES	NO	NO	NO	3.2	0.01	0.2	40	113	NO	NO	NO	NO	NO	NO	NO	NO
180	1184251	SK	33	M	02-10-2021	08-10-2021	125	100	100/70	110/70	YES	NO	NO	NO	1.7	0.01	0.3	10	125	NO	NO	NO	NO	NO	NO	NO	NO
181	1180233	RB	26	F	26-09-2021	08-10-2021	113	100	100/70	110/70	YES	NO	NO	NO	1.2	0.01	0.2	20	113	NO	NO	NO	NO	NO	NO	NO	NO
182	1185971	AP	24	M	05-10-2021	09-10-2021	118	90	110/70	120/80	YES	NO	NO	NO	3.1	0.02	0.3	70	118	NO	NO	NO	NO	NO	NO	NO	NO
183	1187277	MS	65	M	07-10-2021	11-10-2021	86	95	110/70	116/76	YES	NO	NO	NO	1.8	0.01	0.2	40	86	NO	NO	NO	NO	NO	NO	NO	NO
184	1188753	AS	28	M	10-10-2021	14-10-2021	50	68	120/70	120/70	YES	NO	NO	NO	0.05	0.02	0.04	20	50	NO	NO	NO	NO	NO	NO	NO	NO
185	341421	TR	76	M	07-10-2021	14-10-2021	70	78	110/70	120/70	YES	NO	NO	NO	3.7	0.01	0.23	10	70	NO	NO	NO	NO	NO	NO	NO	NO
186	1163326	BK	52	F	28-08-2021	03-09-2021	120	104	100/60	120/70	YES	NO	NO	NO	2.8	0.01	0.3	40	120	NO	NO	NO	NO	NO	NO	NO	NO
187	1155030	VG	48	M	15-08-2021	14-09-2021	128	105	120/70	120/70	YES	NO	NO	NO	3.6	0.02	0.2	49	128	NO	NO	NO	NO	NO	NO	NO	NO
188	1162688	SS	62	M	27-08-2021	16-09-2021	114	100	120/70	128/80	YES	NO	NO	NO	1.8	0.01	0.1	76	114	NO	NO	NO	NO	NO	NO	NO	NO
189	1146330	KD	42	F	01-08-2021	07-08-2021	80	86	110/70	120/80	YES	NO	NO	NO	2.5	0.02	0.3	28	80	NO	NO	NO	NO	YES	NO	NO	NO
190	1120956	PK	21	F	10-06-2021	17-06-2021	124	106	126/80	130/80	YES	NO	NO	NO	1.6	0.01	0.2	53	124	NO	NO	NO	NO	NO	NO	NO	NO
191	1023338	RV	27	M	05-03-2021	15-03-2021	117	97	126/70	124/70-	YES	NO	NO	NO	2.6	0.01	0.2	78	117	NO	NO	NO	NO	NO	NO	NO	NO
192	1017070	MK	43	M	24-03-2021	27-03-2021	89	87	120/80	126/80	NO	YES	NO	NO	1.6	0.02	0.3	43	89	NO	NO	NO	NO	NO	NO	NO	NO
193	1006798	G	31	M	30-03-2021	12-04-2021	93	90	114/68	120/70	YES	NO	NO	NO	2.7	0.02	0.1	78	93	YES	NO	NO	NO	NO	NO	NO	NO
194	1065734	D	58	M	26-03-2021	02-04-2021	129	98	112/70	124/80	NO	YES	NO	NO	3.6	0.01	0.2	59	129	NO	NO	NO	NO	NO	NO	NO	NO
195	1198979	S	58	F	28-10-2021	31-10-2021	63	70	110/70	116/70	NO	YES	NO	NO	1.8	0.01	0.4	47	63	YES	NO	NO	NO	NO	NO	NO	NO
196	1199663	JP	63	M	29-10-2021	09-11-2021	96	90	120/70	120/70	YES	YES	NO	NO	0.9	0.02	0.05	67	96	NO	NO	NO	NO	NO	NO	NO	NO
197	1199666	K	70	F	29-10-2021	05-11-2021	58	70	106/68	110/70	NO	YES	NO	NO	3.8	0.01	0.1	32	58	NO	NO	NO	NO	NO	NO	NO	NO
198	1176030	R	22	M	18-09-2021	05-10-2021	77	80	110/70	110/70	NO	YES	NO	NO	1.6	0.02	0.4	72	77	NO	NO	NO	NO	NO	YES	NO	NO
199	1181069	IV	19	M	27-09-2021	02-10-2021	118	90	116/70	124/78	YES	NO	NO	NO	1.4	0.01	0.3	98	118	NO	NO	NO	NO	NO	NO	NO	NO
200	116156	KB	43	F	02-09-2021	20-09-2021	93	97	118/68	120/70	YES	NO	NO	NO	2.6	0.02	0.23	88	92	YES	NO	NO	NO	NO	NO	NO	NO
201	1191757	IT	75	M	16-10-2021	20-10-2021	82	84	90/70	100/70	YES	NO	NO	NO	6	0.06	0.7	400	82	YES	NO	NO	NO	NO	NO	NO	NO
202	1193406	A	21	M	18-10-2021	20-10-2021	56	67	100/70	116/70	YES	NO	NO	NO	1.8	0.02	0.1	20	56	NO	NO	NO	NO	NO	NO	NO	NO
203	1190510	GS	52	M	13-10-2021	19-10-2021	90	90	120/70	120/70	YES	NO	NO	NO	1.2	0.01	0.1	54	90	NO	NO	NO	NO	NO	NO	NO	YES
204	1191660	SJ	46	M	15-10-2021	18-10-2021	72	70	116/80	118/80	YES	NO	NO	NO	3	0.02	0.2	87	72	NO	NO	NO	NO	YES	NO	NO	NO
205	1190600	JK	45	F	13-10-2021	20-10-2021	88	90	130/70	130/70	YES	NO	NO	NO	1	0.01	0.3	60	88	YES	NO	NO	NO	NO	NO	NO	NO

		ECG findings									X ray findings			2D Echo findings							
Sr. No	MRD No	INTRAVENTRICULAR CONDUCTION DELAY	SINUS BRADYCARDIA	SINUS TACHYCARDIA	PR INTERVAL ms	QTc INTERVAL ms	ST DEPRESSION	T WAVE INVERSION	NSTEMI	STEMI	PERICARDIAL EFFUSION	PLEURAL EFFUSION	CARDIOMEGALY	EF 20%-30%	EF 30%-40%	EF 40%-50%	EF 60%	RWMA	MR	TR	GHK LV
160	1211212	NO	NO	NO	106	448	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
161	1222833	YES	NO	NO	176	503	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
162	1208988	NO	NO	YES	108	426	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
163	1160510	NO	NO	NO	104	422	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
164	1160426	NO	YES	NO	88	403	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
165	1123338	NO	NO	NO	0	455	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
166	1062686	NO	NO	YES	148	425	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
167	1023772	NO	NO	YES	149	406	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
168	1213238	NO	NO	NO	96	428	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
169	1216506	NO	NO	NO	110	385	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
170	1169264	NO	YES	NO	134	392	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
171	1184135	NO	NO	NO	118	402	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
172	1184044	NO	NO	YES	130	426	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
173	1181827	NO	YES	NO	138	419	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
174	1176031	NO	NO	NO	108	152	NO	NO	NO	YES	MINIMAL	MODERATE	YES	NO	YES	NO	NO	YES	NO	NO	YES
175	1173416	NO	NO	NO	142	500	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
176	1184458	NO	NO	YES	130	450	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
177	1184504	NO	NO	NO	459	208	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
178	1184505	NO	NO	NO	110	418	NO	NO	NO	YES	MILD	MILD	YES	YES	NO	NO	NO	NO	NO	NO	YES
179	1184331	NO	NO	YES	126	459	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
180	1184251	NO	NO	YES	138	443	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
181	1180233	NO	NO	YES	134	450	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
182	1185971	NO	NO	YES	110	428	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
183	1187277	YES	NO	NO	180	400	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
184	1188753	NO	YES	NO	142	416	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
185	341421	YES	NO	NO	176	475	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
186	1163326	NO	NO	YES	138	425	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
187	1155030	NO	NO	YES	150	517	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
188	1162688	YES	NO	NO	186	449	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	MILD	NO
189	1146330	NO	NO	NO	116	454	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
190	1120956	NO	NO	YES	120	416	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
191	1023338	NO	NO	YES	126	411	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
192	1017070	YES	NO	NO	158	483	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
193	1006798	NO	NO	NO	220	404	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	MILD	NO
194	1065734	NO	NO	YES	112	439	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
195	1198979	NO	NO	NO	114	401	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
196	1199663	YES	NO	NO	148	449	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
197	1199666	NO	YES	NO	186	455	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
198	1176030	NO	NO	NO	126	414	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
199	1181069	NO	NO	YES	122	394	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
200	116156	NO	NO	NO	116	500	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
201	1191757	NO	NO	NO	150	435	NO	NO	NO	YES	MINIMAL	MODERATE	YES	NO	YES	NO	NO	YES	MILD	NO	YES
202	1193406	NO	YES	NO	142	403	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
203	1190510	NO	NO	NO	110	490	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
204	1191660	NO	NO	NO	136	399	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
205	1190600	NO	NO	NO	152	500	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO

Sr. No	MRD No	Initials	Age	Sex	Date of admission	Date of Discharge/ Dama/ Death	Vitals				Tropical fever serology				Biochemical findings											
							INITIAL HR	FINAL HR	INITIAL BP mmHg	FINAL BP mmHg	DENGUE	LEPTOSPIROSIS	MALARIA	SCRUB TYPHUS	CPKMB ng/ml	TROP T ng/ml	TROP I ng/ml	BNP pg/ml	RATE	REGULAR SINUS RHYTHM	1 DEGREE AV BLOCK	VT	SVT	JUNCTIONAL RHYTHM	SINUS ARRHYTHMIA	ATRIAL FIBRILLATION	PREMATURE COMPLEXES
206	1191356	VA	47	M	14-10-2021	19-10-2021	120	100	90/60	100/70	YES	NO	NO	NO	3	0.01	0.2	500	120	NO	NO	NO	NO	NO	NO	NO	NO
207	1189613	SR	32	F	11-10-2021	20-10-2021	80	80	120/70	120/70	YES	NO	NO	NO	2	0.01	0.4	55	80	YES	NO	NO	NO	NO	NO	NO	NO
208	1188161	SK	40	M	09-10-2021	09-10-2021	104	104	100/70	100/70	YES	NO	NO	NO	12	0.05	1.14	1770	104	NO	NO	NO	NO	NO	NO	YES	NO
209	1191725	RK	51	F	15-10-2021	17-10-2021	72	78	120/70	120/70	YES	NO	NO	NO	0.05	0.02	0.1	70	72	NO	NO	NO	NO	NO	NO	NO	YES
210	1188089	ML	62	M	09-10-2021	17-10-2021	123	90	110/70	120/70	YES	NO	NO	YES	0.01	0.02	0.3	66	123	NO	NO	NO	NO	NO	NO	NO	NO
211	1188900	NB	18	F	10-10-2021	14-10-2021	93	97	120/70	120/70	YES	NO	NO	NO	1.9	0.01	0.4	99	93	YES	NO	NO	NO	NO	NO	NO	NO
212	1185424	KK	55	F	05-10-2021	09-10-2021	132	100	120/70	126/80	YES	NO	NO	NO	2.8	0.01	0.4	72	132	NO	NO	NO	NO	NO	NO	NO	NO
213	1196691	HS	31	M	25-10-2021	26-10-2021	128	98	128/70	128/70	YES	NO	NO	NO	3.2	0.01	0.2	60	128	NO	NO	NO	YES	NO	NO	NO	NO
214	1192358	S	35	F	16-10-2021	22-10-2012	97	90	118/70	124/80	YES	NO	NO	NO	1.8	0.02	0.3	33	97	YES	NO	NO	NO	NO	NO	NO	NO
215	1191728	DR	70	M	15-10-2021	23-10-2021	72	78	90/60	100/70	YES	NO	NO	NO	1.6	0.01	0.05	400	72	NO	YES	NO	NO	NO	NO	NO	NO
216	1191739	SK	72	M	15-10-2021	21-10-2021	66	70	120/70	120/70	YES	NO	NO	NO	2.8	0.01	0.30	60	66	NO	YES	NO	NO	NO	NO	NO	NO
217	1191255	SK	47	M	14-10-2021	20-10-2021	130	100	110/70	126/80	YES	NO	NO	NO	1.4	0.01	0.2	68	130	NO	NO	NO	NO	NO	NO	NO	NO
218	1190741	PS	46	M	13-10-2021	21-10-2021	124	104	90/70	100/70	YES	NO	NO	NO	8	0.06	2.7	700	124	NO	NO	NO	NO	NO	NO	NO	NO
219	456807	AK	33	M	23-10-2021	25-10-2021	66	70	120/70	120/70	YES	NO	NO	NO	1.5	0.02	0.2	50	66	NO	NO	NO	NO	NO	YES	NO	NO
220	1195206	RK	39	M	21-10-2021	26-10-2021	128	100	114/80	120/80	YES	NO	NO	NO	2.6	0.01	0.36	80	128	NO	NO	NO	NO	NO	NO	NO	NO
221	1192573	BS	65	M	17-10-2021	26-10-2021	130	98	116/78	120/70	YES	NO	NO	NO	1.7	0.02	0.1	79	130	NO	NO	NO	NO	NO	NO	NO	NO
222	1196628	RG	53	F	24-10-2021	27-10-2021	120	96	108/68	120/70	YES	NO	NO	NO	3.6	0.01	0.3	43	120	NO	NO	NO	YES	NO	NO	NO	NO
223	1195924	G	25	M	23-10-2021	23-10-2021	117	80	110/70	114/80	YES	NO	NO	NO	2.6	0.01	0.2	78	117	NO	NO	NO	NO	NO	NO	NO	NO
224	1196692	RD	30	F	25-10-2021	26-10-2021	122	98	120/70	120/70	YES	NO	NO	NO	2.5	0.01	0.3	61	122	NO	NO	NO	NO	NO	NO	NO	NO
225	1140176	SS	27	M	20-10-2021	26-10-2021	52	67	110/70	114/74	YES	NO	NO	NO	1.2	0.01	0.1	88	52	NO	NO	NO	NO	NO	NO	NO	NO
226	1191283	VB	71	M	14-10-2021	21-10-2021	79	80	120/70	120/70	YES	NO	NO	NO	3.6	0.02	0.1	32	79	NO	NO	NO	NO	NO	NO	NO	NO
227	1188070	BK	63	M	08-10-2021	18-10-2021	136	98	80/50	100/70	YES	NO	NO	NO	8	0.09	0.57	700	136	NO	NO	NO	NO	NO	NO	NO	NO
228	1190560	SD	50	F	13-10-2021	19-10-2021	87	89	120/70	126/80	YES	NO	NO	YES	2.6	0.01	0.23	11	87	NO	NO	NO	NO	YES	NO	NO	NO
229	1196407	PK	60	F	23-10-2021	26-10-2021	78	82	110/70	120/70	YES	NO	NO	NO	1.4	0.02	0.12	55	78	NO	NO	NO	NO	NO	NO	NO	NO
230	1195035	SK	49	M	21-10-2021	24-10-2021	75	76	120/70	120/70	YES	NO	NO	NO	1.7	0.02	0.11	66	74	NO	NO	NO	NO	YES	NO	NO	NO
231	1195128	PK	60	M	21-10-2021	25-10-2021	50	79	100/70	110/80	YES	NO	NO	NO	2.7	0.01	0.12	80	50	NO	NO	NO	NO	NO	NO	NO	NO
232	1192568	HW	40	F	17-10-2021	22-10-2021	78	80	118/70	120/70	YES	NO	NO	NO	1.8	0.01	0.32	77	78	YES	NO	NO	NO	NO	NO	NO	NO
233	1190803	M	22	M	13-10-2021	20-10-2021	90	90	116/70	120/80	YES	NO	NO	NO	2.2	0.02	0.20	66	80	NO	NO	NO	NO	NO	NO	NO	YES
234	1194501	GS	28	M	20-10-2021	23-10-2021	99	90	126/70	124/60	YES	NO	NO	NO	1.8	0.01	0.2	67	99	NO	NO	NO	NO	NO	YES	NO	NO
235	1190812	MS	71	M	14-10-2021	22-10-2021	77	79	90/70	100/70	YES	NO	NO	NO	10	0.08	0.9	478	78	NO	NO	NO	NO	NO	NO	NO	NO
236	1194556	SS	52	M	20-10-2021	23-10-2021	74	78	120/70	120/70	YES	NO	NO	NO	1.7	0.02	0.3	50	77	NO	NO	NO	NO	NO	NO	NO	YES
237	1194665	JS	68	M	21-10-2021	23-10-2021	76	80	118/70	124/70	YES	NO	NO	NO	1.6	0.01	0.2	40	77	NO	NO	NO	NO	NO	NO	NO	NO
238	613687	NB	50	M	10-10-2021	21-10-2021	116	90	90/60	110/70	YES	NO	NO	NO	3.7	0.01	0.21	300	116	NO	NO	NO	NO	NO	NO	NO	NO
239	5234	S	18	M	08-10-2021	13-10-2021	78	80	120/70	120/70	YES	NO	NO	NO	1.5	0.01	0.2	40	74	YES	NO	NO	NO	NO	NO	NO	NO
240	1188776	JA	30	M	10-10-2021	15-10-2021	75	78	80/60	100/70	YES	NO	NO	NO	8	2	4	800	75	YES	NO	NO	NO	NO	NO	NO	NO
241	1190778	AG	46	M	13-10-2021	17-10-2021	64	70	120/70	120/70	YES	YES	NO	NO	1.2	0.02	0.3	56	64	NO	NO	NO	NO	NO	NO	NO	YES
242	1190658	SR	57	F	13-10-2021	18-10-2021	96	98	110/70	124/70	YES	NO	NO	NO	1.6	0.01	0.2	60	96	NO	NO	NO	NO	NO	YES	NO	NO
243	1190809	J	27	M	14-10-2021	18-10-2021	135	100	80/60	100/70	YES	NO	NO	NO	1.2	0.01	0.2	300	135	NO	NO	NO	NO	NO	NO	NO	NO
244	1190029	VT	52	M	12-10-2021	17-10-2021	88	80	120/70	120/70	YES	NO	NO	NO	2.6	0.02	0.1	120	88	NO	NO	NO	NO	NO	NO	NO	NO
245	1194235	S	29	M	20-10-2021	20-10-2021	140	140	118/70	116/80	YES	NO	NO	NO	1.5	0.01	0.1	20	140	NO	NO	NO	NO	NO	NO	NO	NO
246	1188919	VK	39	M	11-10-2021	18-10-2021	115	98	120/70	120/70	YES	NO	NO	NO	2.6	0.02	0.2	67	115	NO	NO	NO	NO	NO	NO	NO	NO
247	1192118	AK	70	M	16-10-2021	16-10-2021	70	70	100/70	100/70	YES	NO	NO	NO	3.1	0.01	0.3	33	70	NO	NO	NO	NO	NO	NO	NO	NO
248	1188733	JK	54	F	09-10-2021	14-10-2021	84	80	120/70	120/70	YES	NO	NO	NO	2.1	0.02	0.2	78	84	YES	NO	NO	NO	NO	NO	NO	NO
249	1188872	KK	64	M	10-10-2021	15-10-2021	68	70	110/70	110/70	YES	NO	NO	NO	3.7	0.01	0.1	60	68	NO	NO	NO	NO	NO	NO	NO	NO
250	1128204	KS	47	M	16-09-2021	24-09-2021	126	98	116/68	118/70	YES	NO	NO	NO	1.8	0.02	0.3	180	126	NO	NO	NO	NO	NO	NO	NO	NO
251	1180325	DK	54	M	25-09-2021	30-09-2021	119	97	116/80	126/70	YES	NO	NO	NO	2.8	0.01	0.2	70	119	NO	NO	NO	NO	NO	NO	NO	NO
252	285765	SR	39	F	27-10-2021	30-10-2021	114	100	120/70	120/70	YES	NO	NO	NO	1.6	0.01	0.2	150	114	NO	NO	NO	NO	NO	NO	NO	NO
253	1196585	R	32	F	24-10-2021	29-10-2021	122	95	110/70	114/80	YES	NO	NO	NO	2.8	0.03	0.23	30	122	NO	NO	NO	NO	NO	NO	NO	NO
254	1186424	AK	36	F	06-10-2021	11-10-2021	123	100	124/68	128/80	YES	NO	NO	NO	1.7	0.01	0.3	70	123	NO	NO	NO	NO	NO	NO	NO	NO
255	1163317	D	47	F	28-08-2021	07-09-2021	80	80	120/70	120/70	YES	NO	NO	NO	0.2	0.01	0.3	89	80	YES	NO	NO	NO	NO	NO	NO	NO
256	1179365	RA	38	F	24-09-2021	26-09-2021	124	100	116/74	126/74	YES	NO	NO	NO	3.7	0.01	0.3	90	124	NO	NO	NO	NO	NO	NO	NO	NO
257	239222	NK	72	M	20-10-2021	01-11-2021	172	104	100/70	100/70	YES	NO	NO	NO	2.6	0.02	0.2	56	170	NO	NO	NO	NO	NO	NO	NO	NO
258	1082571	BO	31	F	10-04-2021	15-04-2021	123	87	118/70	126/80	YES	NO	NO	NO	3.2	0.02	0.2	70	123	NO	NO	NO	NO	NO	NO	NO	NO

		ECG findings									X ray findings			2D Echo findings							
Sr. No	MRD No	INTRAVENTRICULAR CONDUCTION DELAY	SINUS BRADYCARDIA	SINUS TACHYCARDIA	PR INTERVAL ms	QTc INTERVAL ms	ST DEPRESSION	T WAVE INVERSION	NSTEMI	STEMI	PERICARDIAL EFFUSION	PLEURAL EFFUSION	CARDIOMEGALY	EF 20%-30%	EF 30%-40%	EF 40%-50%	EF 60%	RWMA	MR	TR	GHK LV
206	1191356	NO	NO	YES	146	421	NO	NO	NO	NO	MINIMAL	MODERATE	NO	NO	NO	YES	NO	NO	NO	NO	YES
207	1189613	NO	NO	NO	100	444	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
208	1188161	NO	NO	NO	0	482	NO	NO	NO	YES	MILD	MODERATE	YES	NO	NO	NO	YES	NO	NO	NO	YES
209	1191725	NO	NO	NO	100	440	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
210	1188089	NO	NO	YES	188	455	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
211	1188900	NO	NO	NO	96	429	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
212	1185424	NO	NO	YES	150	411	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
213	1196691	NO	NO	NO	146	439	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
214	1192358	NO	NO	NO	100	451	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
215	1191728	NO	NO	NO	390	433	NO	NO	NO	NO	NO	MILD	NO	NO	NO	YES	NO	NO	NO	NO	YES
216	1191739	NO	NO	NO	250	388	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
217	1191255	NO	NO	YES	116	443	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
218	1190741	NO	NO	YES	120	455	NO	NO	NO	YES	MINIMAL	MODERATE	YES	NO	NO	YES	NO	YES	NO	NO	YES
219	456807	NO	NO	NO	134	369	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
220	1195206	NO	NO	YES	144	437	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
221	1192573	NO	NO	YES	136	427	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
222	1196628	NO	NO	NO	142	455	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
223	1195924	NO	NO	YES	138	462	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
224	1196692	NO	NO	YES	132	429	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
225	1140176	NO	YES	NO	198	379	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
226	1191283	YES	NO	NO	160	482	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
227	1188070	NO	NO	NO	538	122	NO	NO	NO	NO	NO	MODERATE	NO	YES	NO	NO	NO	YES	NO	NO	NO
228	1190560	NO	NO	NO	118	482	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
229	1196407	YES	NO	NO	172	494	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
230	1195035	NO	NO	NO	158	382	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
231	1195128	NO	YES	NO	134	358	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
232	1192568	NO	NO	NO	100	440	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
233	1190803	NO	NO	NO	148	420	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
234	1194501	NO	NO	NO	140	500	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
235	1190812	YES	NO	NO	148	456	NO	NO	NO	NO	MINIMAL	MODERATE	NO	YES	NO	NO	NO	NO	NO	NO	YES
236	1194556	NO	NO	NO	148	426	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
237	1194665	YES	NO	NO	134	435	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
238	613687	NO	NO	YES	134	435	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
239	5234	NO	NO	NO	86	450	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
240	1188776	NO	NO	NO	126	458	NO	NO	NO	YES	MINIMAL	MODERATE	NO	YES	NO	NO	NO	NO	NO	NO	NO
241	1190778	NO	NO	NO	114	401	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
242	1190658	NO	NO	NO	126	508	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
243	1190809	NO	NO	YES	106	429	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
244	1190029	YES	NO	NO	160	450	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
245	1194235	NO	NO	YES	112	432	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
246	1188919	NO	NO	YES	116	424	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
247	1192118	YES	NO	NO	164	479	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
248	1188733	NO	NO	NO	100	431	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
249	1188872	YES	NO	NO	174	405	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
250	1128204	NO	NO	YES	154	443	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
251	1180325	NO	NO	YES	126	429	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
252	285765	NO	NO	YES	122	433	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
253	1196585	NO	NO	YES	114	420	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
254	1186424	NO	NO	YES	120	464	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
255	1163317	NO	NO	NO	146	473	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
256	1179365	NO	NO	YES	114	454	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
257	239222	YES	NO	NO	88	470	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
258	1082571	NO	NO	YES	142	433	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO

Sr. No	MRD No	Initials	Age	Sex	Date of admission	Date of Discharge/ Dama/ Death	Vitals				Tropical fever serology				Biochemical findings												
							INITIAL HR	FINAL HR	INITIAL BP mmHg	FINAL BP mmHg	DENGUE	LEPTOSPIROSIS	MALARIA	SCRUB TYPHUS	CPKMB ng/ml	TROP T ng/ml	TROP I ng/ml	BNP pg/ml	RATE	REGULAR SINUS RHYTHM	1 DEGREE AV BLOCK	VT	SVT	JUNCTIONAL RHYTHM	SINUS ARRHYTHMIA	ATRIAL FIBRILLATION	PREMATURE COMPLEXES
259	1180333	SD	51	F	25-09-2021	04-10-2021	100	90	120/70	126/80	YES	NO	NO	NO	1.7	0.01	0.1	80	100	YES	NO	NO	NO	NO	NO	NO	NO
260	1172048	SS	25	M	13-09-2021	10-09-2021	40	60	110/70	110/70	YES	NO	NO	NO	2.6	0.02	0.3	20	40	NO	NO	NO	NO	NO	NO	NO	NO
261	1182574	MK	32	F	30-09-2021	04-10-2021	98	98	120/70	120/70	YES	NO	NO	NO	1.8	0.01	0.3	80	98	YES	NO	NO	NO	NO	NO	NO	NO
262	1188744	RG	35	M	10-10-2021	13-10-2021	80	80	112/80	116/78	YES	NO	NO	NO	2.8	0.02	0.2	70	80	NO	NO	NO	NO	NO	NO	NO	YES
263	1188589	JK	37	F	09-10-2021	13-10-2021	121	106	116/78	126/74	YES	YES	NO	NO	1.6	0.02	0.3	80	121	NO	NO	NO	NO	NO	NO	NO	NO
264	1184419	DS	52	M	03-10-2021	06-10-2021	70	70	120/70	120/70	YES	NO	NO	NO	2.9	0.01	0.2	79	70	NO	NO	NO	NO	NO	NO	NO	NO
265	471354	PK	29	F	01-10-2021	05-10-2021	80	80	112/70	120/70	YES	NO	NO	NO	1.4	0.01	0.2	54	80	NO	NO	NO	NO	NO	YES	NO	NO
266	1184473	RD	34	M	03-10-2021	08-10-2021	98	98	120/70	126/76	YES	NO	NO	NO	2.7	0.02	0.3	87	98	YES	NO	NO	NO	NO	NO	NO	NO
267	1169876	P	25	F	08-09-2021	26-09-2021	92	98	110/70	120/70	YES	NO	NO	NO	3.8	0.02	0.2	54	99	NO	NO	NO	NO	NO	NO	NO	NO
268	1206725	RS	21	M	12-11-2021	18-11-2021	116	95	128/72	128/70	YES	NO	NO	NO	3.7	0.02	0.3	65	116	NO	NO	NO	NO	NO	NO	NO	NO
269	1201106	SR	70	F	01-11-2021	13-11-2021	120	98	120/70	126/80	YES	NO	NO	NO	2.8	0.01	0.2	80	120	NO	NO	NO	NO	NO	NO	NO	NO
270	1204234	SK	24	M	09-11-2021	15-12-2021	78	80	116/60	120/70	YES	NO	NO	NO	1.8	0.02	0.3	90	70	YES	NO	NO	NO	NO	NO	NO	NO
271	1204799	SK	32	F	09-11-2021	12-11-2021	48	60	120/70	120/70	YES	NO	NO	NO	3.6	0.01	0.3	68	48	NO	NO	NO	NO	NO	NO	NO	NO
272	1207790	S	34	F	15-11-2021	19-11-2021	115	100	110/70	126/90	YES	NO	NO	NO	2.8	0.01	0.1	45	115	NO	NO	NO	NO	NO	NO	NO	NO
273	1213183	SK	18	M	24-11-2021	27-11-2021	52	60	120/70	120/70	YES	NO	NO	NO	1.4	0.02	0.2	32	52	NO	NO	NO	NO	NO	NO	NO	NO
274	1206451	MK	18	M	12-11-2021	21-11-2021	130	110	130/70	130/70	YES	NO	NO	NO	2.6	0.03	0.1	45	120	NO	NO	NO	NO	NO	NO	NO	NO
275	1215927	VK	50	M	29-11-2021	30-11-2021	138	30	100/70	40/10	YES	NO	NO	NO	3.8	0.02	0.2	600	138	NO	NO	NO	NO	NO	NO	NO	YES
276	1183183	AK	28	M	30-10-2021	04-10-2021	114	30	100/70	40/20	YES	NO	NO	NO	2.4	0.01	0.3	70	114	NO	NO	NO	YES	NO	NO	NO	NO
277	112456	M	40	M	21-10-2021	07-11-2021	122	44	100/70	60/20	YES	NO	NO	NO	3.6	0.02	0.23	450	122	NO	NO	YES	NO	NO	NO	NO	NO
278	1225083	EB	40	F	16-12-2021	20-12-2021	119	100	120/70	120/70	YES	NO	NO	NO	3.9	0.01	0.1	76	119	NO	NO	NO	NO	NO	NO	NO	NO
279	1214472	PS	65	M	26-11-2021	04-12-2021	132	90	110/70	116/80	YES	NO	NO	NO	2.8	0.02	0.3	490	132	NO	NO	NO	NO	NO	NO	NO	NO
280	1212677	RB	35	M	23-11-2021	29-11-2021	119	102	126/70	128/76	YES	NO	NO	NO	1.6	0.02	0.3	600	119	NO	NO	NO	NO	NO	NO	NO	NO
281	1193990	D	18	F	19-10-2021	21-10-2021	80	80	124/68	126/70	YES	NO	NO	NO	3.2	0.01	0.02	45	80	NO	NO	NO	NO	NO	NO	NO	YES
282	717940	RR	75	F	13-09-2021	21-09-2021	118	98	120/70	124/80	YES	NO	NO	NO	2.6	0.01	0.02	78	118	NO	NO	NO	NO	NO	NO	NO	NO
283	1192339	SG	58	M	16-10-2021	21-10-2021	77	78	110/70	110/70	YES	NO	NO	NO	3.5	0.01	0.03	80	77	NO	NO	NO	NO	YES	NO	NO	NO
284	1194542	HK	64	F	20-10-2021	25-10-2021	89	94	126/80	128/90	YES	NO	NO	NO	2.6	0.01	0.03	112	89	NO	NO	NO	NO	NO	NO	NO	YES
285	1203375	B	45	M	07-11-2021	14-11-2021	113	98	116/70	120/70	YES	NO	NO	NO	1.8	0.02	0.3	508	113	NO	NO	NO	NO	NO	NO	NO	NO
286	1206674	AR	60	F	12-11-2021	17-11-2021	115	98	126/80	130/70	YES	NO	NO	NO	3.8	0.01	0.2	67	115	NO	NO	NO	NO	NO	NO	NO	NO
287	1200259	CS	50	M	30-10-2021	03-12-2021	118	100	124/70	130/70	YES	NO	NO	NO	2.4	0.02	0.3	43	118	NO	NO	NO	NO	NO	NO	NO	NO
288	1204837	A	30	M	09-11-2021	15-11-2021	119	100	120/70	122/70	YES	NO	NO	NO	1.8	0.01	0.2	56	119	NO	NO	NO	NO	NO	NO	NO	NO
289	510592	SK	47	F	14-11-2021	18-11-2021	43	60	110/70	120/70	YES	NO	NO	NO	3.2	0.02	0.3	78	43	NO	NO	NO	NO	NO	NO	NO	NO
290	1207624	JK	82	F	14-11-2021	19-11-2021	113	90	120/60	126/78	YES	NO	NO	NO	2.8	0.01	0.3	54	113	NO	NO	NO	NO	NO	NO	NO	NO
291	1211118	LS	30	M	20-11-2021	28-11-2021	140	100	110/70	120/70	YES	NO	NO	NO	1.7	0.02	0.2	68	140	NO	NO	NO	YES	NO	NO	NO	NO
292	1206657	SK	52	F	12-11-2021	18-11-2021	107	98	90/70	100/70	YES	NO	NO	NO	26	0.04	2.4	432	107	NO	NO	NO	NO	NO	NO	NO	NO
293	1211162	NG	37	F	21-11-2021	29-11-2021	154	100	126/70	130/70	YES	NO	NO	NO	2.5	0.02	0.34	650	154	NO	NO	NO	NO	NO	NO	NO	NO
294	1192400	PD	69	F	16-10-2021	24-10-2021	115	98	130/70	130/70	YES	NO	NO	NO	1.8	0.03	0.3	50	115	NO	NO	NO	NO	NO	NO	NO	NO
295	1171776	SM	49	M	11-09-2021	18-11-2021	124	100	100/70	110/70	YES	NO	NO	NO	3.2	0.02	0.1	60	124	NO	NO	NO	NO	NO	NO	NO	NO
296	1172040	NM	47	M	13-09-2021	19-09-2021	116	98	110/70	120/70	YES	NO	NO	NO	2.9	0.01	0.2	78	116	NO	NO	NO	NO	NO	NO	NO	NO
297	1174817	AM	24	M	17-09-2021	26-09-2021	130	108	126/78	130/70	YES	NO	NO	NO	3.8	0.01	0.3	67	130	NO	NO	NO	NO	NO	NO	NO	NO
298	1174711	RS	44	M	16-09-2021	20-09-2021	74	78	110/70	120/70	YES	NO	NO	NO	1.3	0.01	0.4	34	70	YES	NO	NO	NO	NO	NO	NO	NO
299	1173491	JS	19	M	14-09-2021	18-09-2021	119	100	120/70	126/78	YES	NO	NO	NO	2.7	0.02	0.32	480	119	NO	NO	NO	NO	NO	NO	NO	NO
300	1174819	R	34	M	17-09-2021	24-09-2021	70	70	114/70	120/70	YES	NO	NO	NO	1.6	0.01	0.31	60	70	YES	NO	NO	NO	NO	NO	NO	NO

		ECG findings									X ray findings			2D Echo findings							
Sr. No	MRD No	INTRAVENTRICULAR CONDUCTION DELAY	SINUS BRADYCARDIA	SINUS TACHYCARDIA	PR INTERVAL ms	QTc INTERVAL ms	ST DEPRESSION	T WAVE INVERSION	NSTEMI	STEMI	PERICARDIAL EFFUSION	PLEURAL EFFUSION	CARDIOMEGALY	EF 20%-30%	EF 30%-40%	EF 40%-50%	EF 60%	RWMA	MR	TR	GHK LV
259	1180333	NO	NO	NO	158	500	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
260	1172048	NO	YES	NO	136	400	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
261	1182574	NO	NO	NO	103	419	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
262	1188744	NO	NO	NO	98	412	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
263	1188589	NO	NO	YES	138	422	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
264	1184419	YES	NO	NO	132	448	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
265	471354	NO	NO	NO	166	429	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
266	1184473	NO	NO	NO	98	391	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
267	1169876	NO	NO	NO	118	428	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
268	1206725	NO	NO	YES	120	431	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
269	1201106	NO	NO	YES	146	445	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
270	1204234	NO	NO	NO	100	404	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
271	1204799	NO	YES	NO	134	432	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
272	1207790	NO	NO	YES	130	489	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
273	1213183	NO	YES	NO	120	365	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
274	1206451	NO	NO	YES	148	460	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
275	1215927	NO	NO	NO	112	429	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
276	1183183	NO	NO	NO	116	471	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
277	112456	NO	NO	NO	86	446	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
278	1225083	NO	NO	YES	114	425	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
279	1214472	NO	NO	YES	136	442	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
280	1212677	NO	NO	YES	142	452	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
281	1193990	NO	NO	NO	140	431	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
282	717940	NO	NO	YES	162	404	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
283	1192339	NO	NO	NO	118	420	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
284	1194542	NO	NO	NO	170	411	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
285	1203375	NO	NO	YES	118	398	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
286	1206674	NO	NO	YES	114	466	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
287	1200259	NO	NO	YES	130	443	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
288	1204837	NO	NO	YES	164	449	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
289	510592	NO	YES	NO	178	477	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
290	1207624	NO	NO	YES	142	475	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
291	1211118	NO	NO	NO	94	470	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
292	1206657	NO	NO	YES	122	444	NO	NO	NO	NO	MINIMAL	MILD	NO	NO	YES	NO	YES	NO	NO	NO	YES
293	1211162	NO	NO	YES	86	430	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
294	1192400	NO	NO	YES	162	428	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
295	1171776	NO	NO	YES	150	444	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
296	1172040	NO	NO	YES	140	143	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
297	1174817	NO	NO	YES	112	445	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO
298	1174711	NO	NO	NO	100	418	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	NO	NO	NO
299	1173491	NO	NO	YES	140	413	NO	NO	NO	NO	NO	MODERATE	NO	NO	NO	NO	YES	NO	NO	NO	NO
300	1174819	NO	NO	NO	208	408	NO	NO	NO	NO	NO	MILD	NO	NO	NO	NO	YES	NO	NO	NO	NO

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No. BFUHS/2K21p-TH/ 159 Date 05/01/22

The Principal,
DMC, Ludhiana.

Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 29.10.2021 has approved the plan of thesis of **Deep Shikha**, a student of your college for **MD General Medicine** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis
Cardiac manifestations in patients of tropical fever in tertiary care hospital.

Supervisor
Dr. Sandeep Puri
Prof.,
Dept. of Medicine,
DMCH, Ludhiana.

Co-Supervisor

Dr. ShibbaTakkar
Prof.,
Dept. of Cardiology,
DMCH, Ludhiana.

The student has to submit the four copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

S P Singh

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

45. *If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.*
46. *The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.*

CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MD

INTERNAL MEDICINE

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

JANUARY 2021

DR DEEP SHIKHA

DEPARTMENT OF MEDICINE

DAYANAND MEDICAL COLLEGE AND HOSPITAL

LUDHIANA

ABSTRACT OF PLAN OF THESIS

Title	CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL
For the degree of	INTERNAL MEDICINE
Name of the candidate	Deep Shikha
Supervisor	Dr. Sandeep Puri, Professor, Department of Medicine, DMC&H Ludhiana
Co-supervisor	Dr. Shibba Takkar, Professor, Department of Cardiology, DMC&H Ludhiana
Institution	Dayanand Medical College & Hospital, Ludhiana
University	Baba Farid University of Health Sciences, Faridkot

Introduction: Tropical fevers are defined as infections prevalent in tropical and subtropical regions.
The study would focus on cardiac complications and it' s sequel in following tropical fevers-
1. Malaria
2. Scrub typhus
3. Leptospirosis
4. Dengue

Aim of Study: To study cardiac manifestations in tropical fevers.

Materials & Methods: This prospective study will be conducted in the department of Medicine, Dayanand Medical College & Hospital, Ludhiana for a period of 1 year.

Clinical Significance: In this study the significance of cardiac manifestations in tropical fevers and it' s impact on morbidity and mortality would be assessed.

Keywords: Cardiac manifestations, Tropical Fever

(Signature) Candidate	(Signature) Co-supervisor	(Signature) Supervisor	(Signature) Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL"** exist in the Department of Medicine, DMC&H, Ludhiana and will be provided to be candidate. We will see that the data being included in the thesis are genuine and is collected by the candidate himself under our supervision and guidance.

Supervisor

Dr. Sandeep Puri
Professor
Department of Medicine
DMCH, Ludhiana

Co-Supervisor(s)

Dr. Shibba Takkar
Professor
Department of Cardiology
DMCH, Ludhiana

HEAD OF DEPARTMENT

Dr. Dinesh Gupta
Professor and Head
Department of Medicine
DMCH, Ludhiana

Place: _____

Date: _____

APPROVAL PROFORMA
BY RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	Dr. Deep Shikha
Department	Medicine
Topic of Thesis	Cardiac Manifestations in Patients of Tropical Fever in Tertiary Care Hospital
Likely date of appearing in PG examination	MAY 2023
Date of enrollment	26th July,2020
Name of Head of Department	Dr. Dinesh Gupta
1) Supervisor **2) Co-Supervisor**	Dr. Sandeep Puri Dr. Shibba Takkar
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Harpreet Kaur (Professor & Head, Pathology).	Mr. R K Sharma (Legal Expert)
Dr. Jaspal Singh (Professor & Head, Surgery)	Dr. Ramit Mahajan (Associate Professor, Gastroenterology)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)	Dr. Sandeep Kaushal (Dean Academics & Professor & Head, Pharmacology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal & Professor & Head, Cardiology)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / No

Dr. Sandeep Puri
Chairperson
Research Committee

Approved: Yes / ~~No~~

Prof. Arvind Malhotra
Chairperson
Ethics Committee

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT

PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	DEEP SHIKHA R/O- KOTHI NO 193 PHASE 6 MOHALI SAS NAGAR PUNJAB PIN CODE 160055.
2	NAME OF THE INSTITUTE	Dayanand Medical College and Hospital, Ludhiana
3	COURSE OF STUDY AND SUBJECT	MD Internal Medicine
4	DATE OF ADMISSION OF COURSE	26th JULY 2020
5	TITLE OF THE TOPIC	CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

- The study would be conducted in patients presenting to casuality department of DMCH Ludhiana. Tropical fever including dengue, scrub typhus, malaria and leptospirosis would be followed.
- Cases of tropical fever with confirmed diagnosis (antigen/ serology positive) and pattern of cardiac manifestations would be studied. Congenital heart diseases, substance abuse, rheumatic heart disease, mechanical heart valves, coronary artery disease, immunocompromised states would be included and it's impact on the outcome would be studied.
- Geographical distribution thus observed would help in targeted approach. Prevalence would optimize resource allocation and better management.
- Significant cardiac complications such as arrhythmias, acute coronary events, tachycardias, bradycardias, endocarditis, pericarditis, myocarditis, pulmonary embolism, AV blocks, cardiogenic shock, hypotension in various tropical fevers would be analysed.
- Use of ionotropic, anti-ischemic, antiplatelets, antivirals, anticoagulants, analgesics, antipyretics and fluids and it's effect on the sequel would be reviewed.
- Complete work up including pathological, biochemical, clinical and radiological findings would be investigated. Specific cardiac parameters, echo and ecg findings suggestive of cardiac involvement would be studied. Differential diagnosis may be simplified via implementation of characteristic findings.
- Pattern of cardiac complications and it's effect on outcome would be evaluated. Impact on mortality and morbidity would be studied. Through study preventive measures, pathogenesis, course, clinical manifestation and prognosis of

the diseases in view of cardiac manifestations would be predicted.

- Life threatening complications would be anticipated and prompt diagnosis would aid the whole management. Since outcomes are reversible, early diagnosis and better therapeutic coverage would be life saving. Thus after study newer guidelines can also be proposed.

6.2 REVIEW OF LITERATURE

Tropical fevers are defined as infections prevalent in tropical and subtropical regions.

Tropical fevers studied would include-

- Dengue
- Leptospirosis
- Scrub typhus
- Malaria

DENGUE FEVER

Dengue viruses spread to people through bite of an infected *Aedes* species (Ae. aegypti or Ae.albopictus) mosquito. Dengue is caused by one of any four related viruses: Dengue virus 1, 2, 3 and 4. Those who become infected with the virus a second time are at a significant greater risk of developing severe disease. A blood test is an easy way to confirm diagnosis.

Treatment includes fluids and pain relievers. Severe cases can result in shock, internal bleeding and even death, thus require hospital care.

In a study on cardiac manifestations of dengue fever in 120 patients by Goutam Datta and Pratik Mitra in 2019 it was seen that cardiac manifestations included asymptomatic sinus bradycardia, transient AV blocks, transient ventricular arrhythmias, myocarditis and pericardial effusion.

In a study conducted by Mohit Arora and Rekha SP in 2016 cardiac involvement was analysed in 120 patients of dengue fever. It was observed that patients with dengue fever are at higher risk of developing myocarditis and rhythm disturbance and thus need a close cardiac monitoring.

In a case study on complete heart block in association with dengue hemorrhagic fever by Hafeez UI Hassan Virk, Faisal I, and Zia UR in 2016 it was seen that dengue virus infection affects the heart structurally and functionally. Clinical manifestations of cardiac complications secondary to dengue virus infection vary from self-

limiting arrhythmias to severe myocardial infarction, leading to hypotension, pulmonary edema, and cardiogenic shock.

WHO recommends that countries should consider introduction of the dengue vaccine CYD-TDV only in geographic settings (national or subnational) where epidemiological data indicate a high burden of disease.

MALARIA

Malaria is a life-threatening disease caused by parasites that are transmitted to people through the bites of infected female Anopheles mosquitoes. Symptoms are chills, fever and sweating, usually ocurring a few weeks after being bitten. It is preventable and curable.

Protective clothing, bed nets and insecticides can be protective. People travelling to areas where malaria is common typically take protective drugs before, during and after their trip.

In a prospective study on cardiac involvement in severe malaria by Hemant Narayan Ray, Darshit Doshi, Appu Rajan, Amit K Singh, SB Singh, MK Das in 2015, 27 cases were recorded as severe malaria .It was observed that myocardial damage might be due to multifactorial pathogenesis, being probably the result of vascular obstruction, metabolic and humoral mechanism.

A study conducted by Johanna Herr, Parisa Mehrfar and others on reduced cardiac output in imported plasmodium malaria in 2011 in 28 patients showed that reduced cardiac output is paralleled by increased systemic vascular resistance. Findings may be relevant for fluid management and should be further explored in endemic regions.

Quinoline antimalarials and structurally related compounds have been associated with cardiovascular side effects:

- Sinus bradycardia ,e.g., mefloquine;
- QRS complex widening ,e.g., quindione , quinine ,chloroquine;

- QT Interval Prolongation,e.g.,halofantrine,quinidine,quinine,chloroquine, amodiaquine,piperaquine

RTS, S/ASO1 (RTS, S) is the first and, to date, the only vaccine to show that it can significantly reduce malaria, and life-threatening severe malaria.

SCRUB TYPHUS

Scrub typhus, also known as bush typhus, is a disease caused by bacteria called Orientia tsutsugamushi. Scrub typhus is spread to people through bites of infected chiggers (larval mites). The most common symptoms of scrub typhus include fever, headache, body aches and sometimes rash. Morbilliform rash, eschar, spleenomegaly and lymphadenopathies are typical signs. The most commonly used drug in treatment is doxycycline.

No licensed vaccines are available.

In a study conducted on spectrum of cardiac manifestations and its relationship to outcomes in patients admitted with scrub typhus by Gunasekaran Karthik, Thomas Isaiah Sudarsan and others in 2013 in 81 patients showed that cardiac manifestations are frequent and are associated with increased morbidity but not mortality.

A study on new onset atrial fibrillation predicting for complicating cardiac adverse outcome in scrub typhus by Suk-Yong Jang and others in 2016 in 2402 patients showed new-onset AF could be a poor prognostic factor for 3-month mortality and cardiac complications in scrub typhus infection.

LEPTOSPIROSIS

Leptospirosis is a bacterial disease that affects both humans and animals. Humans become infected through direct contact with the urine of infected animals or with a urine-contaminated environment. The bacteria enter the body through cuts or abrasions on the skin, or through the mucous membranes of the mouth, nose and eyes. Person-to-person transmission is rare.

Leptospirosis is a neglected global disease with significant morbidity and mortality.

In a study conducted by Kinjal Shah, Gayathri PA, Rima NK, Jaya RD on cardiac findings in leptospirosis in 2010 in 24 patients it was observed that endocardial inflammation correlates with vasculitis, which is the principal pathogenetic mechanism of the disease.

A study on cardiac manifestations of leptospirosis by Anoop Mathew, Miriam Shanks, Eapen Punnoose, Louie Fischer, George Koshy and Kevin R Bainey in 113 patients showed that In the largest prospective cohort of leptospirosis patients, cardiac sequelae appear similar to sepsis syndrome with myocardial systolic dysfunction occurring frequently. As such, clinical vigilance pertaining to cardiac status is paramount in these hIgh risk patients

A study on cardiac involvement in leptospirosis by Mitrakrishnan RN, Senaka R in 2012 showed that complications such as chest pain, arrhythmias, pulmonary oedema and refractory shock have been reported in patients with severe disease.

We must consider leptospirosis as a cause of myopericarditis in endemic places and if the epidemiological risk is important.

Thus, it is seen that the incidence of tropical fevers is increasing in our region. Cardiac involvement is frequently observed in these fevers and can contribute to significant morbidity and /or mortality. There are limited studies on this aspect from our region/country and thus the need to conduct the study.

6.3 AIMS AND OBJECTIVES OF THE STUDY

AIM

To study cardiac manifestations in tropical fever.

OBJECTIVE

To study pattern of cardiac manifestations in tropical fever and assess it's correlation to outcome.

7.0 MATERIALS AND METHODS

7.1 SOURCES OF DATA

This prospective study will be conducted in the department of Internal Medicine, Dayanand Medical College and Hospital.

7.2 METHOD OF COLLECTION OF DATA

Inclusion Criteria:

- Age group >18yrs
- Willing to consent and participate in study
- Tropical fever with confirmed diagnosis (Antigen/serology positive)
- Lab findings with raised cardiac markers, abnormal ECG or Echo

Exclusion Criteria

- Age group < 18yrs
- Tropical fever without cardiac manifestations
- Acute febrile illnesses other than tropical fever

DURATION OF STUDY- 1 Year

OUTCOME- To further assess incidence of following cardiac complications in tropical fever with its impact on due course of disease

- Tachycardia/Bradycardia
- AV blocks
- Ventricular Arrhythmias
- Pericarditis
- Myocarditis
- Endocarditis
- Pulmonary embolism

Others-

Acute coronary events (STEMI/ NSTEMI/ Unstable Angina)

STATISTICAL ANALYSIS

Data will be described in terms of range; mean ±standard deviation (± SD), frequencies (number of cases) and relative frequencies (percentages) as appropriate. All statistical calculations will be done

using (Statistical Package for the Social Science) SPSS 21version (SPSS Inc., Chicago, IL, USA) statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

Yes, the study requires routine, haematological, biochemical, microbiological and radiological investigations to be conducted on patients.

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Yes, Attached herewith

LIST OF REFERENCES

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PROFORMA

Sr. No:

NAME

AGE

SEX

MRD NO

DATE OF ADMISSION

CHIEF COMPLAINTS

GENERAL HISTORY

SUBSTANCE ABUSE

VITALS

BP

HR

RR

TEMP

SOB

CPKMB

BNP

XRAY FINDINGS

PERICARDIAL/PLEURAL EFFUSION

CARDIOMEGALY

Signature of Candidate **Signature of Supervisor**

BIOCHEMICAL FINDINGS

CARDIAC ENZYMES-

CPKMB

TROPONIN T/I

TROPICAL FEVER SEROLOGY

ECG FINDINGS

RATE

RHYTHM

PR INTERVAL

QTc INTERVAL

ST DEPRESSION

ST INVERSION

NSTEMI

STEMI

ECHO FINDINGS

EF

RWMA

PASP

MR, GRADE

TR, GRADE

OTHERS

ANY DILATATION/GLOBAL HYPOKINESIA

Signature of Candidate **Signature of Supervisor**

PROSPECTIVE STUDY

DAY 1 DAY 5 DAY 10

Signature of Candidate **Signature of Supervisor**

INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o.....
.....am willing to participate in the study **"CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

.....
Signature of the Witness

.....
Signature of the patient

Name:

Signature of Candidate

Signature of Supervisor

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य **"CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद् देश्य स्पष्ट कर दिया गया है और मुझे यह विश वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫ਼ਾਰਮ

ਮਿਤੀ _____

ਮੈ _____ ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ _____

ਵਾਸੀ _____

"CARDIAC MANIFESTATIONS IN PATIENTS OF TROPICAL FEVER IN TERTIARY CARE HOSPITAL" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ _ ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

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ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ _____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

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ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

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ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ